AN ENGLISH TRANSLATION

OF

THE SUSHRUTA SAMHITA.

Vol. I.—*SUTRASTHANAM.*

AN ENGLISH TRANSLATION

OF

THE SUSHRUTA SAMHITA

BASED ON ORIGINAL SANSKRIT TEXT.

EDITED AND PUBLISHED

BY

KAVIRAJ KUNJA LAL BHISHAGRATNA

WITH A FULL AND COMPREHENSIVE INTRODUCTION, TRANSLATION OF DIFFERENT READINGS, NOTES, COMPARATIVE VIEWS, INDEX, GLOSSARY

&

PLATES.

(IN THREE VOLUMES.)

Vol. I.—SUTRASTHANAM.

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MAHAMAHOPADHYAYA KAVIRAJ DVARKANATH SEN, KAVIRATNA.

(*In Durbar dress*)

॥ शुभमस्तु ॥

पारीणः शास्त्रसिन्धोरनुपमगरिमोद्गारिविद्याप्रचारो
दुर्बोधव्याधितत्त्वावगमननिपुणः प्राणदः पीड़ितानाम् ।
पृथ्वीप्रख्यातकीर्त्तिर्जयति बुधवरोऽशेषविद्यावरेण्यः
श्रीमान् वैद्यावतंसो गुणिगणनिकषो द्वारकानाथसेनः ॥१॥
अनारतमध्यापयञ्छास्त्राण्यशेषाणि हि वह्व्क्षिष्यान् ।
अलभत पदवीं सार्थां यो महामहोपाध्यायेति ॥२॥
आयुर्वेदाब्धिमध्याद्दुरधिगमतमादुद्धृता येन यत्नात्
तास्ताः सिद्धान्तमुक्ताः सकलसुभिषजां कण्ठलग्ना विभान्ति ।
एतामिंलण्डभाषाव्यतिपरिणमितां संहितां सुश्रुतीयां
तस्मै भक्त्याऽवनम्रो वितरति गुरवे कुञ्जलालो द्विजन्मा ॥३॥

PREFACE.

No special apology is necessary for the publication of an English translation of the Sushruta Samhitá. The vast medical literature of ancient India practically remains as yet unexplored, and any undertaking, which has the object of making that *terra incognita*, known to the scientific world, is bound to be welcomed by the public. Spasmodic attempts have been made by several scholars and erudite bodies to bring out an English translation of the Sushruta Samhitá, as the most representative work of the Áyurveda, but we regret to say that such efforts have hitherto proved abortive. In spite of incomplete information on the subject many drugs of the Áyurvedic Materia Medica have been adopted by different foreign systems of medicine, and this has afforded us a fresh impetus to issue an English translation of the book, which not only deals with the essentials of Indian Therapeutics but embraces the whole range of the science of Áyurveda, as it was understood and practised by the Vedic sages.

We sincerely hope that the English rendering of Sushruta, which we have undertaken, will, when completed, supply a long-felt want and help to start a fuller inquiry into the properties of the indigenous drugs of India. Many institutions have been already started both in England and Germany with the sole object of studying the ætiology of tropical diseases, and of formulating an empirical system of their prevention and cure, and we hope an English translation of the Sushruta Samhitá, embracing as it

does the results of researches made by our ancient Rishis in the land of their origin may contribute no small amount of useful information to those bodies. "We have many things to learn" observes Lt. Col. C. P. Lukis, M.D., F.R.C.S., I.M.S., Principal, Medical College, Calcutta, "from the people of this country in respect of medicine and medical science," and we doubt not that an accurate knowledge of the contents of this splendid monument of the Áyurveda in quarters where it has every chance of being utilised and improved upon will make the human race better equipped to combat the ills of life.

A few remarks on the method we have adopted in editing this work are necessary by way of explanation. We have carefully collated all the available texts of the Sushruta Samhitá, whether printed or otherwise, expunging from the body of our work all texts, which, though not proved to be wholly spurious, are of questionable authority, and putting them in foot-notes as "Different Readings" or "Additional Texts." In cases of doubt or discrepancy of opinion we have thought fit to abide by the decision of our revered preceptor, Mahámahopádhyáya Kaviraj Dvárkánath Sen, Kaviratna, and inserted within brackets explanatory clauses, where a strictly literal translation of texts would not convey their true meaning. In many instances it is impossible to find in the English language equivalent words for the technical terms of the Áyurveda. In such cases we have put approximate English words within brackets, after the original Sanskrit terms. For example we have translated the term Ojah as albumen. But the Ojah of the Áyurveda is a disputed thing. It may mean something like but not exactly albumen; glycogen, which contributes largely to

the reproductive activity of the body in certain instances, would appear to be the more correct description. In cases like this we have not put before our readers, any suggestions of our own, but left them free to draw their own inference. And for this purpose we further intend to append to the last volume of this work an index and a glossary illustrating the possible meanings of the Áyurvedic terms with English and Latin synonyms, wherever possible. The true meaning of the Áyurveda can be better explained or understood only with the light of modern science, and we leave it to our European colleagues to carry on the research on the lines we have suggested with regard to this ancient system of medicine, which a better knowledge of its principles and methods will enable them to do.

By a lamentable oversight, the terms Váyu, Pittam, Kaphah and Dosha have been translated as wind, bile, phlegm and humour in the first few chapters.

For the sake of convenience we have divided the entire work into three volumes, the first containing only the Sutrasthánam, the second Nidánam, Shárira and Chikitsá, and the third Kalpa and Uttara Tantram.

We have adopted the diagrams of surgical instruments from that most valuable work of the Thakore Saheb of Gondal, called the History of the Aryan Medical Science, for which I am particularly indebted to His Highness.

In conclusion, we beg to convey our sincerest thanks to our preceptor's son Kaviraj Jogendranáth Sen Vidyá-bhusana M. A., Dr. U. D. Banerji L. R. C. P., M. R. C. S. (Lond), and Lt. Col. K. P. Gupta M. A., M. D., I. M. S., Professor Jánakináth Bhattáchárya M.A. B.L., P.R.S. for having kindly examined the different portions of the manuscript. I am grateful to Dr. Surendranáth

Gosvámi B. A., L. M. S. too, for the kind interest he has all along taken in the publication of this work and for various intelligent suggestions, which have been of considerable help to me.

My thanks are also due to numerous learned authors, ancient and modern from whose writings, I have found it necessary to make frequent quotations.

10, Kashi Ghose's Lane.
1st December, 1907.
CALCUTTA.

KUNJA LAL BHISHAGRATNA.
Kaviraj.

INTRODUCTION.

Sushruta :—His age and personality :—A few preliminary observations regarding the technique of the Áyurvedic system of medicine are necessary at the outset to correctly understand the aim and scope of the Sushruta Samhitá. Who was Sushruta ? When and where did he live and flourish ? These are questions that would naturally suggest themselves to the readers of the following pages ; but they can only be imperfectly answered like all similar questions respecting the lives of our ancient worthies. In a country like India where life itself was simply regarded as an illusion, the lives of kings or commoners were deemed matters of little moment to the vital economy of the race ; and all histories and biographies were looked upon as the embodiment of the flimsy vanities of life. Lives of saints and canonised kings had been made use of in certain instances as themes of national epics. But they were intended more to elucidate or enunciate the doctrines of certain schools of Ethics or Metaphysics than to record any historical fact or event. Authentic history we have none beyond chronicles of state events and royal names in some instances ; and those which are usually found in the Sanskrit Puránas are strange combinations of myths and legends, which often contradict each other. Hence the utter futility of attempts to explain a historical fact by the light of a votive medal or tablet unearthed perhaps from the ruins of one of our ancient cities. Such an endeavour serves, in most cases, only to make the "darkness visible," and the confusion more confounded.

Identity of Sushruta and Divodása :—It is only safe to assert that Sushruta was of the race of Vishvámitra. The Mahábháratam (1) represents him as a son of that royal sage. This coincides with the description given of him in the present recension of the Samhitá. The Garuda Puránam (2) places Divodása as fourth in descent from Dhanvantari, the first propounder of medical science on earth, whereas the Sushruta Samhitá describes the two as identical persons. But this apparent anomaly in the Samhitá can be accounted for, if we consider that in some parts of India the custom still prevails of appending, for the purposes of better identification, the name of one's father, or of a glorious ancestor to one's name, and it is therefore not surprising that Divodása (the preceptor of Sushruta), who was a firm believer in the doctrine of psychic transmigration, should represent himself as an incarnation of Dhanvantari, and assume his name and style in the usual way. Beyond this meagre genealogy we possess no trustworthy information regarding the life and personality of Sushruta, the father of Indian Surgery.

Age of the Sushruta Samhitá :—We have no means of ascertaining what the Samhitá was like as originally written by Sushruta, the present being only a recension,or rather a

(1) श्यामायनोऽथ गार्ग्याश्च जाबालिः सुश्रुतस्तथा ।
विश्वामित्रात्मजाः सर्व्वे मुनयो ब्रह्मवादिनः ॥

Mahábháratam—Anushasan Parva, Ch. IV

(2) विश्वामित्राद्देवरात मधुच्छन्दादयः सुताः ।
आयुषो नहुषस्तस्मादनेना रजिरम्भकौ ॥
क्षत्रवृद्धः क्षत्रवृद्धात् सुहोत्रश्चाभवन्नृपः ।
काश्यकाशगृत्समदाः सुहोत्रादभवंस्त्रयः ॥
गृत्समदाच्छौनकोऽभूत् काश्याद्दीर्घतमास्तथा ।
वैद्यो धन्वन्तरिस्तस्मात् केतुमांश्च तदात्मजः ।
भीमरथः केतुमतो दिवोदासस्तदात्मजः ॥

Garuda Puranám, Chap. 139, Vs. 8-11.

recension of recensions, made by Nágárjuna (1). All opinions concur in identifying him with the celebrated founder of the Mádhyamika school of Buddhistic philosophy—a fact which materially assists us in fixing the age of the present Samhitá. A few quotations from the Vriddha (old) Sushruta are all that are preserved of the original Samhitá. But their genuineness is of a problematic character, and we are not sure whether they are the productions of lesser lights, or of ancient though less renowned commentators, attributed to the master to invest them with a greater sanctity and authority—a practice which was quite common amongst the bibliographers of Ancient India.

Date of Nágárjuna :—At all events Nágárjuna who redacted the Sushruta Samhitá lived about the latter part of the fourth century before the Christian era ;(2) and the

(1) "यत्र यत्र परोक्ते नियोगस्तत्र तत्रैव प्रतिसंस्कर्त्तृसूत्रं ज्ञातव्यं। प्रतिसंस्कर्त्ता-पीहनागार्जुन एव"।

Dallana's Commentary, Sutrasthánam, Ch. I. 1.

Dallana mentions the names of Jejjada, Gayadasa etc., as the redactors of the original Samhitá, and rejects as spurious or of questionable authority the texts which cannot be found in their editions of the work. Most probably the authoritative verses are quotations from the Vriddha Sushruta.

Recension or Pratisamskára consists in curtailing statements that have been made inordinately elaborate, and in dilating upon truths that have been very succinctly dealt with in the original book. A Redactor or Pratisamaskartá makes an old book new again.

संक्षिपत्यतिविस्तीर्णं लेशोक्तं विस्तृणाति च।
संस्कर्त्ता कुरुते तन्त्रं पुराणञ्च पुनर्नवं॥

A Samhitá, on the other hand, deals with aphorisms contained in the Vedas.

वेदवाक्यनिबद्धत्वात् संहितास्ताः प्रकीर्त्तिताः।

(2) तदा भगवतः शाक्यसिंहस्य परनिर्वृतेः।
अस्मिन्महीलोकधातौ सार्द्धं वर्षशतं ह्यगात्॥
बोधिसत्त्वश्च देशेऽस्मिन्नेको भूमीश्वरोभवत्।
स च नागार्जुनः श्रीमान्, * * *॥

Rájatarangini I. Taranga. Vs. 172-173.

original or Vriddha Sushruta must have been written at least two centuries earlier in order to acquire that hoary authority and prescription of age, which alone could have given its right to a recension at the time. Several scholars on the authority of a very vague and general statement concerning the recension of the Samhitá in Dallana's commentary, ascribe the authorship of the Uttaratantram (latter portion of the Sushruta Samhitá) to Nágárjuna. We, on the other hand, hold the Uttaratantram to be neither an interpolation, nor a subsequent addition, but that it forms an integral portion of the book as it was originally written, though not planned by the Rishi. In the first Chapter of Sutrasthánam Divodása formally divides the Science of A'yurveda into eight subdivisions, such as, the Shalya (surgery), Shálakya (portion treating of diseases restricted to super-clavicular regions such as the eyes, etc.), Káya-Chikitsá (general diseases such as, fever, etc.), but does not speak anything about them in the first five Sthánas or subdivisions of the book. It is only once in the 25th chapter of the Sutrasthánam that he mentions the name of Netravartma (diseases of the eyelids) in connection with the classification of surgical operations. It is impossible that Divodása would fall short of his duties by omitting to give instructions on all the subdivisions of the A'yurveda as he promises at the outset, or that Sushruta would leave his Samhitá, which is pre-eminently a work on surgery, incomplete by banishing ophthalmic surgery, laryngotomy or fever-therapeutics from his work. From the general plan of the book we can safely assert that Sushruta dealt with easier or more elementary topics in the first five subdivisions of his Samhitá in the manner of our modern progressive readers, reserving the discussion of those requiring a more advanced knowledge and skill for the Uttaratantram. The Uttaratantram has not been included within the five original subdivisions of the Samhitá inasmuch as it embraces and more elaborately discusses

topics which legitimately belong to, or are but incidentally mentioned in those subdivisions. Hence it is more of the nature of an appendix or supplement, arising out of the exigencies of the original subdivisions. It is probable that Nágárjuna might have redacted this part of the Samhitá in common with its other portions.(1)

Western opinions on the subject :—The consensus of western opinions is to place Nágárjuna in the first quarter of the third Century B. C. (2). and for fixing Sushruta as a contemporary of Sákya Sinha Buddha. It is contended that the age immediately preceding Sákya Muni was a period of decadence in Hindu thought ; and the Sushruta Samhitá must have been the fruit of a revived intellectual activity which usually follows the advent of a new creed—an assumption which is in favour of the hypothesis of Greek influence on the Hindu system of medicine. But great men there had been in India before Buddha. The age which immediately preceded the age of Buddha was by no means an age of decadence properly speaking, the age which followed the downfall of Buddhism shows, on the contrary, signs of true decadence. India had had eminent philosophers and scientists almost contemporaneously with the great Buddha. The chronological facts collected above from the Mahábháratam, and the Garuda Puránam could have been construed to prove that the age of Sushruta was prior to that of the Mahábháratam but for the internal evidence furnished by the Samhitá itself as to the probable date of its composition which we shall have occasion to deal with later on.

Extraneous Evidence :—Sushruta is mentioned in the

(1) Mahámahopádhyáya Kaviráj Dváraká Náth Sen Kaviratna of Calcutta subscribes to this opinion.—Tr.

(2) Bael's Buddhistic Records of the Western World. Vol. II. P. 212. Stein's Rájatarangini.

(3) Lalita-Vistaram—Rája R. L. Mitter's Edition, Chapter I.

Vártikas of (1) Kátyáyana (4 Century B. C.) and we have no hesitation in saying that the original Samhitá was written at least two centuries before the birth of Buddha. We are equally ready to admit, on the other hand, that the final recension of the Samhitá by Nágárjuna, at least the form in which we have it, was made about the second Century B. C.

Two Nágárjunas :—Several scholars, on the authority of Dallana (the celebrated commentator of the Sushruta Samhitá) endeavour to establish the identity of Nágárjuna (the redactor of this Samhitá) with his namesake, the celebrated alchemist of the tenth Century (2). But their contentions fall to the ground when we know that many verses of the Sushruta Samhitá occur in the works of Bágbhat (Ashtángahridayam) and Mádhava (Nidánam), which are two of the works which were translated by the order of the Kaliph (3) in the eighth century. The internal evidences of the book do not supply us with any authentic material to compose anything like a biography of this father of Hindu Surgery.

Internal Evidence :—The line in the Samhitá, which has formed the veritable bone of contention amongst scholars of all shades of opinion as throwing a light upon the probable date of its composition, occurs in the Shárira—Sthánam, in connection with the development of the fœtal body and reads as "Subhuti Gautama said that it is the trunk that first developed."

Conflicting testimonies and the uncertain indication of materials at our disposal :—It is a matter of historic

(1) सुश्रुतेन प्रोक्तं सौश्रुतं

Kátyáyana's Vártikas to Pánini's Grammar.

(2) नागार्ज्जुनो मुनीन्द्रः शशास यल्लोहशास्त्रमतिगहनं । तस्यार्थस्य स्मृतयेव-यमेतद्विशदाक्षरैर्ब्रूमः ।

Chakra Dutta—Rasháyandhikára.

(3) P. C. Roy—Hindu Chemistry p. XVIII. (1902).

certainty that Subhuti was one of the personal disciples of Sákya Sinha Buddha, and that it was customary amongst the contemporary Buddhists to append the appelation of their (1) lord (Gautama or Bodhisattva) to the name of a proselyte to accentuate his wisdom and sanctity in the world. A certain section of scholars is never tired of setting up this line as a conclusive evidence of the fact that the Samhitá was, at best, a contemporary production of early Buddhism. But they shut their eyes to opinions of Shaunaka and others on the subject quoted exactly in the same portion of the book, which places the date of its composition at least several centuries earlier. Shaunaka, who was the sixth in remove from the immortal Vyása in direct line of discipleship, was the author of the renowned Shaunaka Samhitá of the Atharvan. These facts lend a very plausible colour to our hypothesis that the original Sushruta Samhitá which, was first composed perhaps contemporaneously with the latter portions of the Atharvan, naturally discussed the opinions of Shaunaka and other Vedic embryologists, while Nágárjuna, at the time of redacting that book, quoted the opinion of his contemporary Subhuti for the purpose of giving him an equal status with the Vedic Rishis, if for nothing else.

Greek Influence :—As regards Hellenic influence on the Hindu system of medicine and on the Sushruta Samhitá in special, we must disabuse our mind of all sentiments of racial vanity and proceed to investigate the case in a scientific and unprejudiced spirit before giving a more detailed account of the contents of the Sushruta Samhitá.

(1) Nágárjuna Bodhisattva was well practised in the art of compounding medicine. Nágárjuna Bodhisattva by moistening all the great stones with a divine and superior decoction changed them into gold.—Bael's Buddhistic Records of the western world Vol. II.

प्रजापतिष्ट्वाबध्नात् प्रथममस्तृतं वीर्य्याय कं ।
तं ते बध्नाम्यायुषे वर्चसे ओजसे च बलाय चास्तृतस्त्वाभिरक्षतु ॥
Anuvák 19. 45. 46. 5.

Sushruta and Hippocrates :—From the very apparent similarity which exists between the contents of this Samhitá and the aphorisms of Hippocrates, many western scholars are apt to conclude too hastily that the ancient Indians drew their inspiration in the healing art from the medical works of the Greeks. But the reverse may be said of the Greeks as well with the greater confidence because such an assertion is supported by historic facts, and confirmed by the researches of the scholars of the west (1). According to all accounts Pythagoras was the founder of the healing art amongst the Greeks and the Hellenic peoples in general (2). This great philosopher imbibed his mysteries and metaphysics from the Bráhmanas of India. Mr. Pocock in his *India in Greece* identifies him with Buddhagurus or Buddha, and it is but an easy inference to suppose that he carried many recipes and aphorisms of his master's Áyurveda with him. The sacred bean of Pythagoras is thought to have been the (3) Indian Nelumbium (Utpalam). We know that simultaneously with the birth of Buddhism, Buddhist Sramanas were sent out to Greece, Asia minor, Egypt and other distant countries to preach their new religion. They were known to the Greeks and there is good reason to believe that the Greek Simnoi (venerable) were no other than the Buddhist Sramanas (4). Now a missionary usually teaches the sciences of his country in addition to the preaching of his gospel. The distant mission stations or monasteries of Buddhism were

(1) There is no ground whatever to suppose that Sushruta borrowed his system of medicine from the Greeks. On the contrary, there is much to tell against such an idea—Weber's History of Indian Literature.

(2) The Origin and Growth of the Healing Art—Bedroe P. 162.

(3) Pratt's Flowering Plants. Vol. I P. 57.

(4) These 'Simoi (venerable) whom Clement of Alexandria has narrated to have rendered worship to a pyramid originally dedicated to the relics of a god, were the Buddhist Arhats (venerables) Sramanas.

Lalita-Vistaram—Rája Rájendra Lala Mitter's Edition, Ch. I.

the principal centres for disseminating Bráhmanic culture in distant lands, and Hippocrates, though he did his utmost to liberate medical science from the thraldom of speculative philosophy, yet might have thought it necessary to retain only those truths of the Áyurveda which Pythagoras and the Buddhistic brotherhood might have imported into his country, and which do not exactly appertain to the domain of pure metaphysics. Of course, it is quite possible for men of different nationalities to arrive at the same truth or conclusion independently. There are coincidences in science as in art and philosophy. (1) Gravitation and circulation of blood (2) were known to the Indians long before the births of Newton and Harvey in Europe. The celebrated atomic theory was preached in the Gangetic valley some five hundred years before the birth of Christ (3). But well may we ask those, who still adhere to this Hellenic hobby, to look at the reverse side of the picture as well. It may be stated without the least fear of contradiction that the Charaka and Sushruta, through the Channel of Arabic, Persian and Latin translations still form the

(1) आकृष्टशक्तिश्च मही तया यत् खस्थं गुरुस्वाभिमुखः स्वशक्त्या ।
आकृष्यते तत्पततीव भाति समे समन्तात् कुरियं यतः खे ॥

Siddhánta Shiromani (Bháskarácháryaya) Golodhyáya.

(2) धातूनाम् पूरणं सम्यक् स्पर्शज्ञानमसंशयम् । स्वसिरासुचरद्रक्तं कुर्य्याच्चान्यान् गुणान् अपि ॥ यदातु कुपितं रक्तं सेवते स्ववहा सिराः, तदास्य विविधा रीगा जायन्ते रक्तसम्भवाः । भावप्रकाशम् । (Bhávaprakásha).

The Hárita Samhitá, which according to certain scholars, is older than the Sushruta Samhitá, refers to the circulation of blood in describing Pánduroga (Anæmia). The disease, he observes, is caused by eating clay which thus blocks the lumen of veins and obstructs the circulation of blood. Bhávamisra, the celebrated author of Bhávaprakásham, and who is a century older than Harvey, has the above couplets bearing on the subject.

(3) Vaiseshika Darshana by Kanáda.

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basis of all systems of scientific medicines in the world (1). Of these, the Sushruta Samhitá is the most representative work of the Hindu system of medicine. It embraces all that can possibly appertain to the science of medicine (2).

Sushruta prior to Charaka :—The general consensus of expert opinion is to place Charaka prior to Sushruta in respect of time. But the Puránas unanimously describe Sushruta as a disciple of Dhanvantari, the first-propounder of medical science. The long compounds (samásas) used by him, the prose and metrical portions of the Sushruta after the models of Jaimini, Patanjali, and other philosophical writers who had adopted prose or metre according to the exegetic or rationalistic tenor of the subjects in their works, have all been cited to prove Sushruta a contemporary of the Darshanas, or of Buddha. But these may serve, at least, to fix the date of the recension by Nágárjuna, *i.e.*, the Sushruta Samhitá as we have it, but can never help to determine the chronology of Sushruta, the disciple of Dhanvantari "who was churned out of the primordial ocean in the golden age (Satya Yuga) (3). On the other hand, if

(1) A. "The great works of Charaka and Sushruta were translated into Arabic, under the patronage of Kaliph Almansur, in the seventh century. The Arabic version of Sushruta is known by the name of "Kelale-Shawshoore-al-Hindi." These translations in their turn were rendered into Latin. The Latin versions formed the basis of European medicine, which remained indebted to the Eastern science of medicine down to the seventeenth century."—History of the Aryan Medical science (Thákore Sáheb of Gondal) P. 196.

B. For the indebtedness of Arabic school of Medicine to the works of Indian masters, see Puschmann P. 162.

C. Bedro'e. Book IV. Ch. II. 286—299.

(2) Dr. Wise (Hindu system of medicine).

(3) क्षीरोदमथने वैद्यो देवो धन्वन्तरिर्ह्यभूत् ।
बिभ्रत् कमण्डलुं पूर्णममृतेन समुत्थितः ॥
आयुर्वेदमथाष्टाङ्गं सुश्रुताय स उक्तवान् ।

Garuda Puránam. Chap. 142. Vs. 5-6.

the testimonies of the Puránas have any historical worth, we can safely place him somewhere in the Satya Yuga, (age) at least in those dim centuries which immediately succeeded the composition of the Atharvan. Charaka, too, in connection with his discourse on the development of the fœtal body has cited the opinion of Dhanvantari (1) on the subject (the same as promulgated in the Sushruta Samhitá) & referred his disciples to the Dhanvantari school of surgeons (meaning Sushruta and his school) in cases where surgical aid and knowledge are necessary ; this proves that Sushruta was before Charaka.

Sushruta as a Surgeon:—Sushruta was emphatically a surgeon, and the Sushruta Samhitá is the only complete book we have which deals with the problems of practical surgery and midwifery. Almost all the other Samhitás written by Sushruta's fellow students are either lost to us, or are but imperfectly preserved. To Sushruta may be attributed the glory of elevating the art of handling a lancet or forceps to the status of a practical science, and it may not be out of place here to give a short history of the Áyurveda as it was practised and understood in Pre-Śuhsrutic times if only to accentuate the improvements which he introduced in every branch of medical science.

Commentators of the Sushruta Samhitá:—We would be guilty of ingratitude if we closed this portion of our dissertation without expressing a deep sense of our obligation to Jejjada Áchárya, Gayádása, Bháskara, Mádhava, Brahmadeva, Dallana and Chakrapáni Datta, the celebrated commentators and scholiasts of the Samhitá, who have laboured much to make the book a repository of priceless

(1) सर्वाङ्गनिर्वृत्तिर्युगपदिति धन्वन्तरिः ।

Charaka, Shárirasthánam. Chap. V.

तत्र धान्वन्तरीयाणामधिकारः क्रियाविधौ ।
वैद्यानां कृतयोगानां व्यधशोधनरोपणे ॥

Charaka, Chikitshásthánam. Chap. V.

wisdom and experience. Dallana has made use of all the commentaries in revising and collating the texts of Sushruta Samhitá.

Origin and History of the A'yurveda:—In the science of medicine, as in all other branches of study, the ancient Aryans claim to have derived their knowledge from the gods through direct revelation. Sushruta in his Samhitá has described the Ayurveda as a subdivision (Upánga) of the Atharvan (1), while according to others the science of the Ayurveda has its origin in the verses of the Rik Samhitá (2). Indeed the origin of the science is lost in dim antiquity. Death and disease there had been in the world since the advent of man; it was by following the examples of lower animals in disease, that our primitive ancestors acquired by chance the knowledge about the properties of many valuable medicinal drugs. There is a verse in the Rigveda which shows that the lower animals were the preceptors of man in matters of selecting food stuffs and medicinal simples (3). Individual experiences in the realms of cure and hygiene were collected, and codified, and thus formed the bases of the present Ayurveda. The verses in the Vedas clearly mark each step in the progress of medical knowledge. The properties of a new drug were always hymned in a Vedic verse with a regularity which enables us to put our finger upon the very time when a particular drug of our Materia Medica first came to be of service of man (4).

(1) Sushruta Samhitá, Sutrasthánam. Ch. I. 3.

(2) ऋग्वेदस्यायुर्वेद उपवेद:

Charana Vyuha by Vyása.

(3) गोभिर्यवं चकृषत्। ऋग्वेद १म। २३। १५

(4) A. शर: शण: अघद्विष्टादेवजाता वीरुच्छपथरोपनी।

वभ्रोरर्जुनकाण्डस्य यवस्यते पलान्यतिलस्य तिलोपिञ्जा॥

Atharvan Samhitá

B. See also Ibid I 2 II. 4. 7. 9. 25, 27 and 36.

Discrepancies accounted for :—Verses on medicine, hygiene, and surgery, etc. lie scattered throughout the four Vedas. Those having bearing on Medicine proper occur most in the Rigveda, and perhaps it was for this reason that Agnivesha, who was a physician, has ascribed the origin of the Áyurveda to revelations in the Rik Samhitá. Precepts relating to the art and practice of surgery are found most in the Atharvan (1), which amply accounts for the fact of Sushruta's opinion of holding the Áyurveda as a subdivision of the Atharvan, as he was pre-eminently a surgeon himself.

Different kinds of physicians :—Vedic India, like Ancient Egypt, recognised the principle of the division of labour among the followers of the healing art. There were Shalya Vaidyas (surgeons), Bhisaks (physicians) and Bhisag-atharvans (magic doctors), and we find that at the time of the Mahábháratam, which nearly approaches the age of our author, the number of the sects had increased to five which were named as Rogaharas (physicians), Shalyaharas (surgeons), Vishaharas (poison curers), Krityaharas (demon-doctors) and Bhisag-Atharvans (2).

In the Vedic age (before the age of Sushruta) physicians had to go out into the open streets, calling out for patients (3). They lived in houses surrounded by gardens of medicinal herbs. The Rigveda mentions the names of a thousand and one medicinal drugs (4). Verses eulogising the virtues of water as an all-healer, and of certain trees and herbs as purifiers of the atmosphere are not uncommon in the Vedas. Indeed the rudiments of Embryology, Midwifery, child management (pediatrics) and sanitation were formu-

(1) तस्मादद्यीनासत्याविचद्य आधत्तम दस्राभिषजाथर्व्वान् ।

Rik Samhitá I M. 116-16.

(2) Mahábháratam. Shántiparva. Rájadharmánusháshan Parvádhyáya.

(3) रुतं भिषक् ।

Rigveda. IX M. 112.

(4) शतं ते राजान भिषक सहस्रमुर्व्वींगभीरा. Rik.

lated in the age of the Vedas and Bráhmanas, and we shall presently see how from these scanty and confused materials Sushruta created a science and a Samhitá which invite the admiration of the world even after thousands of years of human progress.

Origin of A'yurvedic Surgery :—In India, as in all other countries, curative spells and healing mantras preceded medicine (1) ; and the first man of medicine in India was a priest, a Bhisag Atharvan, who held a superior position to a surgeon in society. The first Aryan settlements in the Punjáb were often assailed by the dark aborigines of the country, and in the wars that ensued surgeons had frequently to attend to the Aryan chiefs and soldiery. So in the Rigveda (2) we find that legs were amputated and replaced by iron substitutes, injured eyes were plucked out, and arrow shafts were extracted from the limbs of the Aryan warriors. Nay we have reasons to believe that many difficult surgical operations were successfully performed, though some of them sound almost incredible. But although the aid of surgery was constantly sought for, surgeons were not often allowed to mix in the Bráhmanic society of Vedic India. This is hinted at by our author when he says that it was during the wars between the gods and demons that the Ashvins, the surgeons of heaven, did not become entitled to any sacrificial oblation till they had made themselves eligible for it by uniting the head of the god of sacrifice to his decapitated body. The story of the progress of A'yurvedic surgery is long and interesting, but it must suffice here to mention that with the

(1) Bedroe's Origin of the Healing Art, and Sir John Lubbock's Prehistoric times.

(2) सद्यो जंघामायसीं विश्पलायै धने हितासर्तवे प्रत्यधत्तं ॥

* * * * *

तस्मा अक्षीनासत्याविचक्ष आधत्तं दस्राभिषजावर्व्वान् ॥

Rik Samhitá I A. 8 Ad. 186 S. 116. 5.

return of peace, the small Aryan settlements grew in number and prosperity. And the rich Aryan nobles now travelled in stately carriages, and as there were constant accidents there arose a class of surgeons who exclusively devoted themselves to the treatment of injured animals. The surgeons, now no longer required in camps and on battle fields, had to attend on the rich ladies at baronial castles during parturition, the magic doctor (Bhisag Atharvan) who could assuage fever and concoct love potions (1) being held as the greatest of them all. But the Vedic Áryans had a regular armoury against pain and suffering, which is in no way inferior to our present day Materia Medica. But of that we shall speak later on in connection with the therapeutics of Sushruta.

The scope and nature of Sushruta's Surgery :—So much for the history of Vedic Surgery. It is in the Sushruta Samhitá that we first come across a systematic method of arranging the surgical experiences of the older surgeons, and of collecting the scattered facts of the science from the vast range of Vedic literature. Sushruta had no desire of abandoning the Vedas in the darkness and pushing on an independent voyage of discovery. The crude methods and the still cruder implements of incision such as, bits of glass, bamboo skins etc., laid down and described in the Samhitá, may be the relics of a primitive instrumentalogy which found favour with our ancestors long before the hymnisation of any Rik verse. Practical surgery requires a good knowledge of practical anatomy. The quartered animals at the Vedic sacrifices afforded excellent materials for the framing of a comparative anatomy (2). Sushruta devoted his whole life to the pursuit of surgery proper, to

(1) इमां खनाम्योषधिं वीरुधं बलवत्तमाम् ।
यया सपत्नीं बाधते यया संविन्दते पतिम् ॥
Rik Samhitá. X M. 145 S. 1.

(2) Vide Aitareya Bráhmana I, 2. II, 12. III, 37.

which he brought a mind stored with luminous analogies from the lower animals. It was he who first classified all surgical operations into five different kinds, and grouped them under heads such as Áharya (extractions of solid bodies), Bhedya (excising), Chhedya (incising), Eshya (probing), Lekhya (scarifying), Sivya (suturing), Vedhya (puncturing) and Visrávaniya (evacuating fluids). The surgery of Sushruta recognises a hundred and twenty-five different instruments, constructed after the shape of beasts and birds, and authorises the surgeon to devise new instruments according to the exigencies of each case. The qualifications and equipments of a surgeon are practically the same as are recommended at the present time. A light refreshment is enjoined to be given to the patient before a surgical operation, while abdominal operations, and operations in the mouth are advised to be performed while the patient is fasting. Sushruta enjoins the sick room to be fumigated with the vapours of white mustard, bdellium, Nimva leaves, and resinous gums of Shála trees, etc., which foreshadows the antiseptic (bacilli) theory of modern times. The number of surgical implements described in the Samhitá is decidedly small in comparison with the almost inexhaustible resources of western surgery, and one may be naturally led to suspect the authenticity of the glorious achievements claimed to have been performed by the surgeons of yore; but then their knowledge of the properties and virtues of drugs were so great that cases, which are reckoned as surgical nowadays, were cured with the help of medicines internally applied. "Surgery," says Tantram, is mutilation not doctoring (1). It should only be employed when the

(1) A दिव्यौषधिं विना देवि शस्त्रविद्या सुनिष्फला ।
वैरूप्यं कुरुते या च दुश्चिकित्स्ये व्यधान्तरे ॥
जायन्ते हि यथाशांसि पाटितानि पुनः पुनः ।
किं तत्र ऽस्त्रसाध्यं स्यात् सुसिद्धैर्भेषजैर्विना ॥

affected vital energy is not strong enough to alone effect the cure that the surgeon is justified to handle his knife. We find in the Samhitá that ophthalmic, obstetric and other operations were performed with the utmost skill and caution.

Plastic and Rhinoplastic Operations :—Doctor Hirschberg of Berlin says—"the whole plastic surgery in Europe took a new flight when these cunning devices of Indian workmen became known to us." The transplanting of sensible skin-flaps is also an entirely Indian method (Sushruta, Sutrasthánam, Ch. XVI). It is Sushruta who first successfully demonstrated the feasibility of mending a clipt earlobe with a patch of sensible skin-flap scraped from the neck or the adjoining part.

To Sushruta is attributed the glory of discovering the art of cataract-crouching which was unknown to the surgeons of ancient Greece and Egypt. Limbs were amputated, abdominal sections were performed, fractures were set, dislocations, hernia and ruptures were reduced, hæmorrhoids and fistula were removed, and we take pride in saying that the methods recommended in the Sushruta Samhitá sometimes prove more successful than those adopted by the surgeons of modern Europe, as we shall have occasion to observe later on. In the case where the intestines are injured, Sushruta advises that "the protruded part should be gently replaced *by following with the finger.*" A surgeon should enlarge the wound in it, if necessary, by means of a knife.

धातूनाम् व्यापदि यत्र भेषजं नैव सिद्ध्यति ।
ह्यामये दुस्तरे तस्मिन् शस्त्रमेव विधीयते ॥
पुनः संशमनं तत्र धातूनाम् हि प्रशान्तये ।
प्रदातव्यं महादेवि शस्त्रादर्व्वाक् ब्रवीमि ते ॥

Mahánilatantram, Patola X. Vs. 72-74.

B. See the Article on "Heredity and some of its Surgical Aspects." By F. C. Titzell, M. D. The Medical Advance Vol. LXIV. June 1906. Page 357.

In the case where the intestine is severed, the severed parts should be held together by applying living black ants to their ends. Then their bodies should be cut off leaving only the heads to serve the same purpose which in modern improved European surgery an animal tissue like catgut is expected to fulfill. After this the intestine should be fairly replaced in the abdominal cavity and the external opening stitched and properly dressed. We abstain here from a lengthy description of the different methods recommended by the Sushruta in cases of abdominal and peritoneal wounds. We only ask our readers to compare this Chapter (II Chikitsásthánam) of the Sushruta Samhitá with the Chapter in any work on European chirurgery which deals with the same subject. Certain medicinal plasters were used to be applied to localise the shafts of arrows embedded in the limbs of wounded soldiers and their exact locations were ascertained from the inflammation caused by the application of such a plaster with a precision which would be sometimes welcome even in these days of Rontgen rays.

Lithotomic Operations :--In these cases, elaborate instructions have been given for making the perineal incision, as well as about the care and general management of the patient after the operation. In a case of Shukráshmari (seminal or spermatic concretion) the formation and existence of which have been very recently discovered by English pathologists, Sushruta enjoins that the stone, if in the urethra, should be removed with the help of Anuvásanam and urethral enematas, failing which the penis should be cut open and the concretion extracted with the help of a hook. Kaviráj Umesh Chandra Gupta in the introduction to his Vaidyaka Shavda-Sindhu remarks, that he and Dr. Durgádása Gupta M. B. translated the Chapters on lithotomic operations and instrumental parturition of the Sushruta Samhitá for the perusal of Dr Charles, the then Principal of the Medical College, Calcutta.

"Dr. Charles highly praised the process of delivery in difficult cases and even confessed that with all his great experience in midwifery and surgery he never had any idea of the like being found in all the medical works that came under his observation."

Amputation :—Amputations were freely made and medicated wines were given to the patients as anæsthetics (1). These conclusively show that the surgery of Sushruta does not rest content with the mere bursting or opening of an abscess, and the healing of the incidental wound, but lays down processes for major operations as well. The removal of the cicatrix until it becomes of the same colour with the surrounding skin and the growth of hair thereon are suggestions which we find nowhere else.

Ophthalmic Surgery :—Of the seventy six varieties of ophthalmic diseases, Sushruta holds that fifty-one are surgical (Uttara Tantram Ch. VIII). The mode of operation which is to be performed in each case has been elaborately described in the Samhitá, and does not unfavourably compare in most instances with modern methods of ophthalmic surgery. Sushruta was aware of the fact that the angle of reflection is equal to the angle of incidence, and that the same ray which impinges upon the retina serves the double purpose of illumining the eye and the external world, and is in itself converted into the sensation of light.

Midwifery :—It is in the region of practical midwifery that one becomes so much impressed with the greatness of Sushruta. The different turning, flexing, gliding movements, the application of the forceps in cases of difficult labour and other obstetric operations involving the destruction and mutilation of the child, such as craniotomy, were first systematically described in the Sushruta Samhitá long before fillets and forceps were dreamt of in Europe, and thousands of years before the birth of Christ. Sushruta, who

(1) For the use of Sanmohinis (anæsthetics) for surgical purposes, see Bhoja Prabandha by Ballála Pandit.

advocates Cæsarean section in hopeless cases of obstruction, lays down that the instrument should be employed only in those cases where the proportion between the child and the maternal passage is so defective that medicated plasters, fumigations, etc., are not sufficient to effect a natural delivery. His directions regarding the management of the puerperal state, lactation and management of the child and the choice of a wet-nurse are substantially the same as are found in modern scientific works of European authors. A feeling of pride and joy moves our heart when we contrast these glorious achievements of our ancestors with the meanness of results which modern Europe has gained in this department of midwifery. In those old days perhaps there were no hospitals to huddle patients together in the same room and thereby to create artificially septicemic poisons which are now so common and so fatal in lying-in rooms. A newly built lying-in room in an open space abunduntly surcharged with the rays of the sun and heat of the burning fire for each individual case, the recommendation of a fresh bamboo-chip for the section of the cord are suggestions the value of which the west has yet to learn from the east.

Dissection :—Sushruta, himself a practical surgeon, was the first to advocate dissection of dead bodies as indispensable for a successful student of Surgery. The *Paruschittas* of ancient Egypt perhaps learnt their art from the Purusachettás (Dissector) of ancient India. With a candour less common among western scholars Dr. Wise observes that, "the Hindu philosophers undoubtedly deserve the credit of having, though opposed by strong prejudice, entertained sound and philosophical views respecting the uses of the dead to the living, and were the first scientific and successful cultivators of the most important and essential of all the departments of medical knowledge, practical anatomy". A bungling surgeon is a public danger and Sushruta says that, "theory without practice is like a one-winged bird that is incapable of flight".

Study of Practical Surgery :—To give efficiency in surgical operations, the pupils of Dhanvantari (Sushruta etc.) were asked to try their knives repeatedly first on natural and artificial objects resembling the diseased parts of the body before undertaking an actual operation. Incision, for example, was practised on Pushpafala (cucerbeta maxima), Alávu (Longenaris Vulgaris) or Trapusha (cucmis pubescuas), evacuating on leather bags full of water and on the urinary bladders of dead animals, scarification on the hides of animals on which the hair was allowed to remain. Venesection was practised on the vessels of dead animals and on the stalks of the water-lily ; the art of stuffing and probing on bamboo reeds etc. : extraction of solid bodies on Panasa (Artocarpus Integrifolia) and such like fruit, scraping on wax spread on a Shálmali (Bombox Malabaricum) plank, and suturing on pieces of cloth, skin or hide. Ligaturing and bandaging were practised on dummies, cauterisation (both actual and potential) on pieces of flesh, and catheterisation on unbaked earthen vessels filled with water. It is almost with a feeling of wonder we hear him talk of extirpation of uterine excrescences and discourse on the necessity of observing caution in surgically operating upon uterine tumours (Raktárvuda). These facts should be borne in mind as they would help us a good deal in accounting for the numerous anomalies that are to be found in the anatomical portions of the Samhitá.

Study of Practical Anatomy :—We have stated before that the quartered sacrificial animals afforded excellent materials for the framing of comparative anatomy. The Aitareya Bráhmana contains special injunction for the quartering of such animals (1) and we are told that the preceptors availed themselves of the religious meetings to

(1) The Aitareya Bráhmana describes a particular way of dividing the organs and viscera of the sacrificial animals which was kept secret among the priests. Aitareya Bráhmana VIII. 1.

demonstrate the lessons on practical anatomy. We come across such terms as the heart, stomach, brain, intestines, anus, liver, spleen, uterus etc. in the Rigveda, and the Aitareya Bráhmana (1). There is an entire hymn (Rik) devoted to the subject and treatment of Phthisis (Rája Yakshmá) which becomes utterly unintelligible in the absence of an accurate knowledge about the structure of lungs, and mechanism of the human heart. The Vedic A'rya fully understood the resultant nature of the human organism. The Rik Mantra, which to this day is recited on the occasion of a funeral ceremony, amply testifies to the fact that he used to look upon his mortal frame as the product of the combination of the five physical elements (2). He understood the effects of different drugs upon digestion and the office which the tendons, muscles, flesh and nerves, etc. respectively serve in the economy. It is in the Sushruta Samhitá that we find a systematic attempt at arranging together the facts of anatomical observation. The age of Sushruta, the A'cháryic age of the A'yurveda, was a period of scientific investigation. The sturdy Aryan colonists exchanged their simple mode of living for luxury and ease. The number of general diseases was great. In

(1) A. तया समस्य हृदयमारिख किकिराकृणु

Rik Samhitá V. VII. 1,23,538.

हृदा इव कुक्षय सोमधाना : *Ibid*

B. Vide also Aitareya Bráhmana I 2. II 12. III 37.

(2) The nature of the human body as the resulting effect of the combination of the five elementals have been clearly described in the verse.

सूर्य्यं चक्षुर्गच्छतु वातमात्माद्यां चगच्छ पृथिवीं च धर्म्मणा

आपोनागच्छ यदि तत्र ते हितमोषधीषु प्रतितिष्ठाशरीरैः ।

Rik Samhitá X M. 16 S. 3.

Which being translated reads :— Let his eye go to the sun, let his breath-wind mix with the wind of the atmosphere, and to the sky, earth and the cereals the parts which have sprung out of them, &c.

vain did the holy Nárada (1) preach the gospel of plain living and high thinking, and exhort them, like Cato, to return to their simple mode of life. The long peace brought opulence in its train and wealth begot indolence and disease. Men like Bharadvája, Angirá, Yamadagni, A'treya, Gautama, Agastya, Vámadeva, Kapisthala, Asamarthya, Bhárgava, Kushika, Kápya, Kashyapa, Sharkaráksha, Shaunaka, Manmatháyani, Agnivesha, Charaka, Sushruta, Nárada, Pulastya, Asita, Chyavana, Paingi and Dhaumya etc. began to write Samhitás. Each hermitage was a College of A'yurveda, and the empirical method of investigation was introduced into each department of the science of cure.

Anatomical Anomalies in the Samhitá :--Having got so far in our analysis, before passing on to the study of the Anatomical portion of the Sushruta Samhitá, we must try to account for the many anomalies and discrepancies that have crept into or have been suffered to remain in the present recension of the book. Take, for example, the line in which Dhanvantari is made to speak of three hundred bones in the human organism. It is impossible that the human frame, in so short a time, has got rid of so many of of its skeletal accessories simply through disuse, or because of their becoming superfluous in the altered condition of its environments. More absurd is it to think that Sushruta, who discards all authority except the testimony of positive knowledge, would write a thing which none but the blind would believe in a dissecting room. The spirit of the age in which he flourished precluded the possibility of such an error.

Anomalies accounted for :--In ancient India, subjects chosen for the demonstration of practical anatomy were always children (2), and naturally those bones, which are

(1) Vide Aitareya Bráhmana VII. 13.

(2) The injunction of the Hindu Shástras is that "corpse of persons more than 2 years old should be burned." Cremation of dead bodies being

fused or anastomised into one whole during adult life, have been separately enumerated—a circumstance which may, to some extent, account for the excess in the number of bones described in this Samhitá (1). Likewise the theory that Sushruta might have included the teeth and the cartilages within the list of skeletal bones comes very near the truth, but it does not reflect the whole truth either. The fact is that the orignial Sushruta Samhitá has passed through several recensions ; and we have reasons to believe that the present one by Nágárjuna is neither the only nor the last one made. The redactors, according to their own light, have made many interpolations in the text, and when Brahmanas, they have tried to come to a sort of compromise at points of disagreement with the teachings of the Vedas (2). Therefore it is that we come across such statements in the Samhitá as "there are 360 bones in the human body, so it is in the Vedas, but the science of surgery recognises three hundred skeletal bones." What lends a greater colour to the hypothesis is that Sushruta, who, in the Chapter on Marma Shâriram, has so accurately described the unions of bones and ligaments, anastomoses of nerves, veins and arteries etc.,

obligatory on Government, as well as on private individuals, it was almost impossible to secure a full-grown anatomical subject in Pauránic India, the more so when we consider that the Hindus look upon the non-cremation and mutilation of a corpse with a peculiar horror as it prevents the spirit from purging off its uncleanness in the funeral fire, and bars its access to a higher spiritual life. Naturally in later and more ceremonial times the interred corpses of infants, less than 2 years old, had to be unearthed and dissected for anatomical purposes ; and these portions of the Sushruta Samhitá might have been modified by the subsequent commentators in order to conform them to occular proofs.—T. R.

(1) See Gray's Anatomy (1897) p. 288 and 301 Figs. 248 and 262.

(2) "अस्थ्नां त्रिभिः शतैः षष्ट्यधिकैः धार्यमाणं ।"

Vishnu Smriti. Ch. 96. 55.

"त्रीणि षष्ट्यधिकानि शतान्यस्थ्नां सह दन्तोलूखलनखैः ।"

Charaka, Shárirasthánam.

must have described their courses and locations, as otherwise it would have been quite impossible for practical surgeons, for whom it was intended, to conform to the directions of the Samhitá in surgically operating on their patients' limbs, and to avoid those vulnerable unions or anastomoses as enjoined therein. These Marmas have been divided into three classes such as, the Sadya-prána-hara ; Kála-prána-hara, and Vaikalya-kara, according as an injury to any of them proves instantaneously fatal, or fatal in course of time, or is followed by a maimed condition of the limb concerned. The fact is that the study of practical Anatomy was in a manner forbidden in the reign of Ashoka Piyadarshi inasmuch as all religious sacrifices were prohibited by a royal edict (1), and the subsequent commentators (who were also redactors on a small scale) of the Sushruta Samhitá, in the absence of any positive knowledge on the subject, had to grope their way out in darkness as best they could ; hence, this wanton mutilation of texts and hopeless confusion of verses in the Shárira Sthánam of the present day Sushruta Samhitá, which should be re-arranged and restored to their proper chapters before any definite opinion can be pronounced on the anatomical knowledge of the holy Sushruta.

Sushruta as a Biologist :—In the first chapter of his Shárira Sthánam, Sushruta discusses the question, what is man, wherein lies his individuality, why does he come into being, why does he die at all ? Like all Indian philosophers, Sushruta argues the question down from the universe to man. The factors or laws, that govern the evolution of the universe in its physical aspect, are extended to cover the evolution of the physical aspect of man (organic evolution). There is but one law and one force which run through the three plains of mind, matter and spirit. Physiology, that fails to look

(1) Journal of the Asiatic Society of Calcutta Vol. VII. P. 261.

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into the nature of life and its background and tries to explain away this intelligent, living force as the product of chemical action of the organic cells, is no Physiology at all. Cell is not life, but there is life in a cell. Cells may be called the true bearers of life. Dr. Weismann insists that it is more correct to speak of the continuity of the general protoplasm than of "the germ cells." Professors Geddes and Thomson observe that, "the bodies are but the torches which burn out, while the living flame has passed throughout the organic series unextinguished. The bodies are the leaves which fall in dying from the continuously growing branch. Thus although death take inexorable grasp of the individual, the continuance of the life is still in a deep sense unaffected ; the reproductive elements (cells) have already claimed their protozoan immortality, are already recreating a new body." But to invest these reproductive cells with immortality, and to deny the same to the individual self, which directs and controls these protoplasms, and is before and behind them, is like the statement of Prof. Huxley when he admits the chance of the physical transmigration of the organic constituents of the human body, and yet denies the possibility of an individual self continuing in any other form. "It is sensibility," observes Sushruta, "that precedes the senses ; and self, the sensibility proceeds from the self to which all such conditions are referred as mine."

Sushruta's Theory of Cosmogony is based on the old Sánkhya Duality of Prakriti (Objective) and Purusha (Subjective). The two are coeval and co-extensive realities. Out of the Avyakta (unmanifest) or Prakriti has evolved the Mahat, the *animated* cosmic matter. Out of this cosmic matter has evolved Ahamkára (the sense of individuality or more correctly egoism) which is divided into three kinds such as the Vaikárika (phenomenal, thought-form), Taijasa (kinetic), and Bhutádi (pertaining to the first form of matter). This Vaikárika Ahamkára in combination with the Taijasa Ahamkára has fathered

the eleven sense organs, which, in combination with the Bnutádi, have produced the five Tanmátras or proper sensibles of touch, sight, hearing, etc. The material principles of sound, light, taste, smell, etc., are but the modifications of these five Tanmátras, of which Akásha (ethereon), Váyu (ether), light, and sound, etc. are the grosser forms. In other words, these Tanmátras may be defined as the atomic essences of the material principles of sound, light, ether, etc. In addition to these, Sushruta, like Kapila, admits the existence of a kind of atom-like units of consciousness, which he calls Purusha. The combination of the sixteen aforesaid categories and the Purusha is for the expansion and liberation of the latter. A human being (individual), who is the fit subject for medical treatment, is the product of the combination of Purusha with the five primordial material principles (Mahábhutas). The Purushas, real selves of beings, the sources of their vital energy, and the controllers and directors of all organic or mental actions, are extremely subtile in their essence, and manifest themselves only through the combination of the seed (paternal element) or ovum (maternal element). It is the Karma (dynamics of acts done by a person in a prior existence) which determines the nature of the body it will be clothed with, as well as the nature of the womb it shall be conceived in, in its next incarnation.

Nature of Self:—Self is a simple substance, and, as such, is immaterial. Force is substance and substance is force. It is endued with constructive intelligence, and, like gravitation or cohesion, can permeate a material body, without, in any way, disturbing it. It is adaptative or elective, or, in other words, elects that kind of selves for its parents as are best suited to the purposes of its being. Man is the outcome of an influx of a self, a force, a dynamis with its path determined by the dynamics of the deeds of its prior existence. To think that vitality starts from

protoplasm, is insanity. Chemically examined protoplasm is but, C, O, H, N and S. But no amount of C, O, H, N and S put together will constitute life. The idea that life has nothing prior to it, that the force which controls the co-ordination of man's economy perished with the death of his organism, is quite puerile. Life is expansion and not creation, and, as such, is linked to those unseen realities which constitute its prior and future selves. We see only the middle link in the chain of existence which we call life, but take no notice of the preceding or succeeding ones which are invisible (1). The grosser material body is linked to a finer, immaterial one, in as much as nothing can exist without being attached to its antecedent. So at each conception there is the influx of a new self, for the lifeless constituents of a human body can not create a man, no matter how many chemical or physiological actions may be postulated to run to their rescue.

A'yurvedic Embryology :—Before entering into the discussion of Sushruta's theory of conception, we shall take a little more trouble to enunciate fully the Vedic theories on the subject. "The child is the fruit of the combination of sperm and ovum" (2). It lies with its head downward inside the uterus, a fact which facilitates its passage out of, and protects its form from the effects of any injury done to that viscus. (3) The eyes of the child are originated,

(1) अव्यक्तादीनि भूतानि व्यक्तमध्यानि भारत ।
अव्यक्तनिधनान्येव तत्र का परिदेवना ॥

Bhagavat Gitá II. 28.

(2) शुद्धे शुक्रार्त्तवे सत्त्वः स्वकर्मक्लेशचोदितः ।
गर्भः संपद्यते युक्तिवशादग्निरिवारणौ ॥

Astánga Hridayam (Vágbhat)
Shárira Sthánam. Ch. I. 1.

(3) तस्मात् पराञ्चो गर्भा धीयन्ते, पराञ्च सम्भवन्ति । * *
* * * तस्मात् मध्ये गर्भाः धृताः ।

Aiteriya Bráhmana VI. 10 ed

as the cephalic portion of the fetal body is first developed. The factors, which are essential to the development of the fetal body, from the time of fecundation to the appearance of the characteristic sense-organs, have been described in a verse of the Rig Veda (1). In the Vedic mythology each organic function is consecrated to the tutelage of a presiding deity, and a Vedic Aryan loves to call a thing oftener by the name of its divine custodian than by that of its own. Rightly translated, the verse would read as follows :—"May Vishnu (the presiding deity of ether and nerve force) expand thy uterus, may Tvashtá (the presiding deity of heat and metabolism) bring about the full differentiation of the limbs and the sex of the fœtus, may Prajápati (the presiding deity of the ovum) sprinkle thy uterus, and mayst thou conceive through the blessing of the lord of human destiny. May Sarasvati (goddess of intellect) and the Ashvins, the surgeons of the gods (the presiding deity of fission, etc.) help thee in taking the seed." Now, the development of the fetal body takes place after the pattern of its father's species, and this conformity to the pattern of its species represents an act of intellection. Hence, the aid of the goddess of intellect has been invoked with that of the celestial surgeons, who preside over the process of cell-division, so essential to the formation of the fetal limbs. Divested of its allegory, the verse would mean

(1) विष्णुर्योनिं कल्पयतु, त्वष्टारूपाणि पिंशतु ।
आसिंचतु प्रजापतिर्धाता गर्भं दधातु ते ॥
गर्भं धेहि सिनीवाली, गर्भं धेहि सरस्वति ।
गर्भं ते अश्विनौदेवावाधत्तां पुष्करस्रजा ॥
हिरण्ययौ अरणौ यं निर्मंथतो अश्विना ।
तं ते गर्भं हवामहे दशमे मासि सूतवे ॥

Rik Samhitá X. M. 184, S.

that the sperm led into a healthy and well-developed uterus through the agency of the Váyu (increased activity of the local nerves) meets the maternal element (ovum) in that viscus. Then the impregnated matter undergoes a process of fission, and takes shape after the pattern of its father's species. When we think of so many idle speculations as regards the process of fertilisation, which obtained credence so late as the beginning of the 18th century in Europe, and the controversies that arose between the Ovists, Performists and Animalculists (1), we cannot help regretting that the Ayurvedic Embryology, which started under such happy auspices, could not fully solve the problem of fertilisation even before the advent of the Tántrik age. The fundamental principles with which the Embryology of the Acháryayas (Sushruta, Dhanvantari, etc.) was started are substantially the same as have now been discovered by the researches of the Western workers. Sushruta in his dissertation on the subject showed the illegitimacy which lay at the root of his predecessor's theory (Shárirasthánam Chap. II.) and took up research exactly where the Vedic Rishis had left off. He clearly demonstrated the fact that "by a physiological process known as Rasapáka (metabolism) the lymph chyle is metamorphosed into sperm in men, or into ovum in women, in the course of a month. The catamenial fluid is carried down into the uterus through its proper ducts. The sperm or ovum is thus the quintessence of a man's or a woman's body. The sperm meets the ovum (Ártavam) in the uterus, which resembles a lotus-bud in shape, and whose aperture is shut up with a mucous deposit as soon as fecundation takes place. The most favourable time for fecundation is between the fourth and twelfth day after the appearance of the flow (Garbhakála)" as has

(1) For a short history of the Theories of Fertilisation, Vide Evolution of Sex (Prof. P. Geddes and J. A. Thompson) Chap. XII. pp. 169—171.

been lately demonstrated by the researches of Prof. Von Ott. (1).

Sexual Diamorphism :—Some light is thrown on the relative preponderance of the sperm and ovum in the birth of a female child. "When the maternal element preponderates the child is female ; when the paternal element is stronger the child is male. When both the elements are equal, the child is of no sex." In theory at least Sushruta admits the possibility of the birth of many children at a single conception. "When the seed is divided into two by its inherent force (Váyu), twins are born in the womb"—a statement which points to the irresistible conclusion that multiplicity of birth is the outcome of the multifarious fission of the seed in the womb under certain abnormal conditions. Sushruta gives a reason for believing that, in exceptional circumstances, and without sexual union, the unfertilised ovum may give rise to perfect offspring, thus giving a prevision of the modern theory of parthenogenesis. Pathological parthenogenesis has occasionally been noticed in higher animals. Oellacher has noted this in respect of hen's eggs, and Janosik has observed it in the ovarian ova of many mammals such as the guinea-pig, etc.(2) Sushruta extends the probability to the human ova under certain conditions. He admits the possibility of conception without the admixture of the male germinal element, though he observes that like all asexual genesis" the development does not proceed far in the case." From such a hypothesis it is but one step to the theory which enunciates the possibility of conception without proper sexual union.

But to understand his theory of sexual diamorphism, it

(1) Vide the chart of menstrual wave prepared by Von Ott given in Man and Woman (Havelock and Ellis) Chap. XI.

(2) The Evolution of Sex Ch. XIII. P. 185.

Prof. P. Geddes and J. A. Thompson.

is necessary that one should fully comprehend the meaning of such Áyuryedic terms on the subject as Ichchhá Shakti (will-force), Shukra-Váhulyam (1) (preponderance of the male reproductive element) and Shonita-Váhulyam (preponderance of the female reproductive element) etc. Sushruta, in common with the Bráhmanic philosophers of Ind, believed that distinction of sex has evolved from a primordial hermaphroditism. Manu in his Institutes has emphasised the fact (2), though in a highly poetic style. He observes that "the Purusha (Logos), by a stroke of Will, divided its body (animated cosmic matter) into two, one of which was male, and the other female." The Tantra says that, "the male part was endued with an energy (force) of its own, which is called **Pitriká Shakti**; and the corresponding female part, with the one, which is called **Mátriká Shakti**. Pitriká Shakti is a disruptive force; Matriká Shakti is a constructive energy. Though the conception of force in Sanskrit sciences is but partially physical, the nearest approach to the connotations of the Pitriká and Matriká Shakti is made by the terms **Anabolism** and **Katabolism** of the Western physiologists. Sanskrit physiology recognises the two opposite poles of vital force in a living organism, and has not taken inconsiderate pains to determine their exact locations in man and woman. Mátrika Shakti, it observes, predominates in the left half of a woman's organism, which is negative as regards vital magnetism. (3) Now, Sushruta says that, in cases where female offspring is desired, the enceinte should

(1) Shárirasthánam Ch. II.

(2) द्विधाकृत्वात्मनो देहमर्द्धेन पुरुषोऽभवत्
अर्द्धेन नारीं तस्यां स विराजमसृजत् प्रभुः ॥

Manu Samhitá Ch. I. 32.

(3) दक्षिणांशः स्मृतः सूर्यो वामभागो निशाकरः ।

Sáradá Tilak Tantram.

snuff through her left nostril (the expressed juice of certain herbals), while the same should be administered through her right nostril where male issue would be the object. In other words, the **anabolic** (Mátriká) or **katabolic** (Pitriká) forces of a mother's organism can be so adjusted with the help of drug-dynamics, as to determine the sex of the child in the womb. The birth of a male child is usually presaged by the appearance of the milk (which according to Sushruta is metamorphised menstrual blood) in the right breast of the enceinte ; and where that has been effected with the help of suitable medicines, it must be presumed that the Katabolic pole of her life-force has been acted upon, as desired.

The original hermaphroditism, which forms the anterior condition of all subsequent sex distinctions, and the character of the two opposite poles of vital energy, have been very clearly set forth in the Pauránik allegory of Ardha-Nárishvara(1). The figure, observes the Pauránik rhapsodist, is half male, half female ; half life, half death (since, death, in fact, is the father of life) (2); half anabolism, half katabolism ; with the crescent moon, the promise, the symbol of progressive evolution on its brow, is made to sit on the eternal bull, the representative of the immutable law of the universe (lit :—the four-footed order). The Rishis and Rasasiddhas of ancient India were fully aware of the fact that, conception is effected only at an enormous sacrifice on the part of the mother ; that the Mátriká Shakti is the real manufacturer of life, and that the Pitriká Shakti (paternal element) evokes, or calls it into play only through its disintegrating or disruptive effect by separating the two opposite life-poles, that lie neutralised through contact. It is love that governs these two complementary

(1) Vishnu Puránam Ch. 7. Vs. 10-11.

(2) कालः संहरते जन्तून् कालो जनयति प्रजाः ।
कलनात् सर्व्वभूतानां काल इत्यभिधीयते ॥

Mahábháratam.

forces of life and death (1), (though in fact they represent the two different aspects of the same energy) and controls its evolutionary rhythms through the desire of seeing itself many though one in reality. Does not modern biology endorse the same view when it says that the reproductive cells, as protozoons, are immortal, and that bodies are the natural appendages which blossom forth and fall off round these cells for the fructification of their innate purposes of being (2)?

A little more investigation into the biological thesis of the Rishis would be necessary for the clear comprehension of "Shukra-Váhulyam" and "Shonita-Váhulyam" of Sushruta and other Tantras (3). Man is both animal and spirit; and the Áyurvedic physiology recognises two distinct sets of apparatus in his organism answering to the different phases of his existence. The one helps him in performing the organic functions, which are so essential to his animal existence, and keeps intact the co-ordination of those internal functions with the incidents of his environments. The other is attuned to the finer forces of nature, and responds

(1) The Evolution of Sex. Ch. XVIII.
Prof. P. Geddes and J. A. Thomson.

(2) "The body or *soma*", Weismann says, "thus appears to a certain extent as a subsidiary appendage of the true bearers of the life,—the reproductive cells". Ray Lankester has again well expressed this :—"Among the multicellular animals, certain cells are separated from the rest of the constituent units of the body, as egg-cells and sperm-cells; these conjugate and continue to live, whilst the remaining cells, the mere carriers as it were of the immortal reproductive cells, die and disintegrate. The bodies of the higher animals which die, may from this point of view be regarded as something temporary and non-essential, destined merely to carry for a time, to nurse, and to nourish the more important and deathless fission-products of the unicellular egg."—Quoted in the Evolution of Sex (P. Geddes and J. A. Thompson) 1901. Chap. XVIII.

(3) (A) रक्ताधिका भवेन्नारी भवेद्रेतोधिकः पुमान् ।
उभयोः समतायान्तु नपुंसकमिति स्थितिः ॥
Sáradá Tilak Tantram.

(B) Sushruta Samhitá (Shárira Sthánam Ch. III)

to the call of his higher or psychic self. The one is **organic**, the other is **psychic**. The one chains him down to the phenomenal, and is governed by the laws of growth and decay ; the other opens on the region of absolute realities where growth and decay have no room to be. Growth is not the only condition of life. Man may exist without food (1) or respiration, only if he can manage to dive deep into the realities within himself. Between these two sets of apparatus there is the Jivátmá, which, by its own peculiar energy (the will-force), can operate in phenomenal or organic plain, or recede from thence into the psychic one, thus being in contact with the world of the senses, and the one that is beyond the darkness of death. Death, in fact, is the grand usherer to life, which is only the rise of the curtain over the life's drama, all equipments for which are made in the green room of death.

A man can not propagate at will. No amount of willing on the part of the parent-animal can help him in creating progeny. The self of the child, who is about to come into life, chooses its own parents, according to the dynamics of its own acts or Karma, from the region of the lunar Pitris or quiescent life, if it be warrantable to use such an expression (2). The self of the would-be child mixes with the self of its human father, and hovers over the reproductive cells of the latter's organism, and regulates the intensity of its father's sexual desire, according to the nature of the sex, determined necessary for the fruition of the purposes of its advent into the world. A greater intensity of its father's desires ensures the preponderance of the Pitriká Shakti (katabolism) in the impregnated ovum, which

(1) रसोल्लासाख्या सा सिद्धिः तया हन्ति क्षुधं नरः ।
क्रियादि निरपेक्षेण सदा तृप्ताः प्रजास्तदा ॥

Skanda Puránam quoted by Shridhara Svámi in his commentaries on the Vishnu Puránam. Ch. VI. V. 16.

(2) कर्म्मणा पितृलोकात् ।

Shruti.

determines the male sex of the child, while such a thing, on the part of the mother at the time, is followed by the relative preponderance of the Mátriká Shakti (anabolism) which accounts for the femininity of the issue. Equal intensity of sexual desires in both the parents, creating an absence of the relative preponderance of the Pitriká and Mátriká Shaktis in the impregnated ovum, leaves the sex of the child practically undetermined. The relative preponderance of the Pitriká or Mátrika Shakti, as evidenced by the greater or less intensity of the sexual desire of either of the parents, which results in the speedier emission of the paternal or maternal element (sperm or ovum) during an act of successful fecundation, is contemplated by the term "Shukra-Váhulyam," or "Shonita-Váhulyam," by the framer of the Samhitá, as may be fully substantiated by a couplet by the venerable Dáruváhi (1).

So far Sushruta is at one with the modern Western theory of preponderant **katabolism** or **anabolism** in the ovum as the determining factor of the sexual diamorphism to the extent that seeds or reproductive cells are the bearers and not the manufacturers of life, only containing those categories which foster life, and help its evolution into an organic being. To deny this would be to admit the chemical, or physiological basis of life, which, as a theory, was never acceptable to the biologists of ancient India. The number of reproductive cells may be increased by suitable dietary, and to say that the immortal reproductive cells, as the creators of life, come out of the mortal, organic food stuff, is to say that darkness is the father of light. The question of the immortality of the seed (germ plasm) has

(1) स्त्रीपुंसयोः सुसंयोगे यद्यादौ विसृजेत् पुमान् ।
शुक्रं ततः पुमान्वीरो जायते बलवान् दृढः ॥
अथचेद्वनिता पूर्व्वं विसृजेद्रक्तसंयुतम् ।
ततोरूपान्विता कन्या जायते दृढसंहता ॥

Dárubáhi (Quoted by Arunadatta in his commentaries on Vágbhat).

been elaborately discussed in the commentaries on the Sánkhya Darshanam(1). The Ojah Vindus (germ cells) pulsate with the vibrations (rhythmic movements), which are the relics of the primordial ethereal vibrations, which ushered in the birth-throes of the universe. As such, they are essential to the evolution of life ; and man, as an offspring of the universe, still retains them in his reproductive cells as the best condition for calling out the life in his offspring, when its self enters into the impregnated ovum in the mother's womb. Life is the essence of self, and not the product of any chemical or physiological process. It is an influx ; and microscopes and spectroscopes may not expose to view the hinterlands of birth and genesis. Perhaps it was this theory of will-force and intensity of parental desire as determining the sex in the child, together with the facts of parthenogenesis observed in lower animals, from which Sushruta was disposed to extend the analogy to the human species, and believed that conception without sexual union is possible in women.

The conception of the nature of these Mátriká and ajriká Shaktis is more clearly set forth in the Pauránika n th regarding the origin (etiology) of fever ; Sushruta relates the story as follows :—Daksha, the father of the universal mother, (or constructive metabolism in man) insulted the divine father, her consort (destructive metabolism), by witholding his quota of sacrificial oblations. The wrath of the insulted deity broke out in the shape of a morbific heat (hyperpyrexia) which is fever. The process of digestion in man has been often compared to an act

(1) (A) पारम्पर्य्यतोऽन्वेषणा वीजाङ्कुरवत् ।

Sánkhya Sutra Ch. I. 122.

(B) तद्वीजात् संसृति

Ibid. Ch. III. 3.

(C) सर्व्वत्र हि स्वस्वकार्य्यजननशक्तियांवद्द्रव्यवस्थायिनीति पातञ्जले सिद्ध
* * * वीजाख्यानां दाहो विदेह कैवल्ये तु * ।

Sánkhya Prabachana Váshya (Vijnán Bhikshu) Ch. I. S. I.

of Homa sacrifice (1) in the A'yurveda. Stripped of its allegory the myth may be explained quite in a pathological line. It means that when the Pitriká Shakti, the process of destructive metabolism (Pitá, father or Shiva in Hindu mythology being the god of destruction or disintegration) of the body is not properly served by the factors, which nourish its constructive metabolism (Father of the Matriká Shakti), the excrements and excretory process of the body are arrested (by the wrathful deity), and the heat generated in consequence is fever. Fever, then, is a disease of defective digestion and excretion. Whenever this Pitriká Shakti is disturbed or not properly served there is fever, and heat is one of its essential effects.

With a precision and love of details, which mark the best days of Bráhmanic literature, Sushruta lays down rules of diet and conduct to be observed by the enceinte, from month to month, during the whole period of gestation, and gives medicinal recipes for the development of a partially atrophied child in the womb.

A perusal of the Chapter on Marma Shâriram would leave no doubt for the conclusion that anatomical knowledge was cultivated by surgeons and soldiers alike. A knowledge about the locations of the vulnerable joints, or nerves, or vein anastomoses where a blow or a little pressure may enable him to make short work of his man could not but be dearly prized by the soldiery at a time when the fate of a war was often decided by the success of a single champion, and we have reasons to believe that a scientific system of wrestling was formulated in the light of the Sushruta Samhitá, and practised by the gentry of ancient India much like

(1) आहिताग्निं सदा पथ्यान्यन्तराग्नौजुहोति यः ।
षट्त्रिंशच्च सहस्राणि रात्रिनां हितभोजनः ॥

Charaka Samhitá.

the Jiujitsu (Skr. Yuyutsu, the intending fighter) of modern Japan, (1).

Sushruta's Physiology:—But if Sushruta is admired so much for his practical and scientific cast of mind, it is his writings on Physiology, (which is practically the same as the one adopted by all schools of the Áyurveda) which have appeared as a stumbling block to the intelligence of many a Western and and Eastern scholar. European Sanskritists have thought fit to translate "Váyu," "Pittam" and "Kapham" (the three main physiological functions) as air, bile and phlegm. But nothing could be more misleading, or erroneous than that. A right understanding of the science of the Áyurvedic medicine, in all its branches, hinges on a right conception of the Váyu, Pittam and Kapham, so we should like to clear up the nature of these three physiological factors before proceeding farther in our enquiry.

Antiquity of the division:—A reference to these three physiological factors of Váyu, Pittam and Kapham, under the name of Tridhátu, is first met with in the Rikveda, (3). Sáyana explains the term as a synonym for Váyu, Pittam and Kapham. The Vedic physicians possessed at least a considerable knowledge of the process of digestion(4), the circulation of gas in the human organism, and of

(1) It is curious that the phonetic and etymological resemblance between Sanskrit "Juyutsu" and Japanese "Jiujitsu" (would be fighter) should be so close. Perhaps it was the Buddhist missionaries (and they were not always peaceful hermits) who had carried with them a system of scientific wrestling from India, which was subsequently developed in Japan. Compare with the complete Kano, Jiu-Jitsu (Jeudo) by H. Irving Hancock and Katsukuma Higashi. Chart I and III.

(3) * * * विधातु शर्म्म वहतं शुभस्पती ॥

Rik. Samhita. I. 3. 6.

Sáyana explains it as

वातपित्तश्लेष्म धातुत्रयोप शमनविषयं सुखं वहतं ।

(4) आपः पीतास्त्रेधा विधीयन्ते । तासां यः स्थविष्ठो धातुस्तन्मूत्रं भवति, योमध्यमस्तल्लोहितं, योऽणिष्ठः स प्राणः । दध्नः सौम्य ! मथ्यमानस्य योऽणिमा स ऊर्द्धः समुदीषति तत् सर्पिर्भवति, एवमेव खलु सौम्य ! अन्नस्याश्यमानस्य योऽणिमा स ऊर्द्धः समुदीषति ।

Chhándagya Bráhmana.

the properties and functions of flesh, fat, muscles, tendons, ligaments and cartilages. But to the A'cháryas of the A'yurveda belongs the glory of first formulating a systematic physiological science, to which end Sushruta as a surgeon did contribute no mean a quota. In the light of Western science the actions of living matter, varied as they are, may be reduced to three categories, viz. (*a*) Sustentative, (*b*) Generative, and (*c*) Correlative functions. The second is not co-extensive with the entire existence of a living organism, Sushruta observes some such distinction among the functions of a living organism when he denominates the living body as the "three supported one" (Tristhunam̃), and describes the normal Váyu, Pittam and Kapham as its three supports. We wonder how the term Váyu, meaning nerve force, can be confounded with the same term meaning air, since Sushruta derives the former from the root "Vá," to move, to spread. Váyu, according to Sushruta, is so called from the fact of its sensory and motor functions such as, smelling, &c. But the Váyu in the A'yurveda is not wholly a physical or organic force, it has its spiritual aspect as well which does not legitimately fall within the scope of our enquiry. It is safe to aver however, that the A'yurvedic physiology, like its sister science in modern Europe, is concerned more with the invisible molecular components of the human organism, than with the workings of its gross members. The holy Agnivesha warns the students of physiology against the danger of regarding the human system as something other than the aggregate of molecules (1).

(1) शरीरावयवास्तु परमाणुभेदेनापरिसंख्येया भवन्ति, अतिवहुत्वादति सौक्ष्म्यादतीन्द्रियत्वाच्च ।

Charaka Samhitá Shárirasthánam, Chap. VII.

The three fundamental principles of Váyu, Pittam and Kaphah:—The actions of living matter vary and so may be reduced to three categories. They are either—(1), functions which affect the material composition of the body and determine its mass, which is the balance of the processes of waste on one hand and those of assimilation on the other. Or (2), they are functions which subserve the process of reproduction which is essentially the detachment of a part endowed with the powers of developing into an independent whole, or (3), they are functions in virtues of which one part of the body is able to exert a direct influence on another, and the body, by its parts as a whole, becomes a source of molar motion. The first may be termed **Sustentative,** the second **Generative,** and the third **Correlative** functions. The above is the sum and substance of the works which a living matter has to perform. But setting apart the processes of reproduction as a subject for future discussion, we shall now try to examine what the other two functions are as understood by Oriental thinkers. In the Mahábháratam the *Prána váyu* is described as a force, akin to electricity. It is somewhat like a flash of lightning (1). This fact at once shows the errors of confounding *Prána váyu* with an effete material —with gases generated during the processes of digestion. Shushruta describes it as a force, (2) which sets the whole organism into motion. Self-evolved, it acts as the principal

(1) प्राणनाच्चैव भूतानां प्राण इत्यभिधीयते ।
प्रेरयत्यभ्र संखातान् धुमजांश्चोष्मजांश्च ॥
प्रथमः प्रथमे मार्गे प्रवाहो नाम योऽनिलः ।
अम्बरे स्नेहमभित्य तड़िद्भ्यश्चोत्तमद्युतिः ॥

Mahábháratam. Shánti Parva S. 39.

(2) Force may be defined as that which tends to produce motion in a body at rest, or to produce change of motion in a body which is moving, —Daschanel.

6

factor that determines the genesis, continuance and disintegration of the living body. It is the primary cause—an all-in-all that governs our organic as well as our cognitive faculties. Its special feature is that the vibration, that is produced in it, instead of travelling like light in a transverse direction, takes a course as the controller of the correlative functions of the system. It maintains an equilibrium between the Pittam and Shleshmá which are said to be inert. (1) But for this adjustment the living body would stand in imminent danger of being consumed like fuel by its internal heat or fire. Taking into consideration the various functions the living body has to perform, Sushruta attempts a classification of Váyu into **Prána, Udána, Samána, Vyána** and **Apána,** which, in detail, correspond to the divisions of functions performed by the Cerebro-spinal and Sympathetic nerves of the Western physiology. Tántric literature abounds in the descriptions of the Nádichakras (nerve plexuses) and contains a more detailed account of the motor, sensory, and mixed nerves according to their differences in their functions and relations. In short, the term Váyu may not only be rightly interpreted to mean the nerve force, but is often extended to include any kind of electro-motor or molecular force (as when we speak of the Váyu of the soil), though the term is loosely applied now to signify gas or air. The Rishis of yore gave the name of Váyu to the bodily force in the absence of any suitable nomenclature, little suspecting that it might be confounded with the atmospheric air by the foreign translators of their works.

(1) A वायुस्तन्त्रयन्त्रधरः प्रवर्त्तकश्चेष्टानाम् ।

Charaka, Sutrasthánam. Chap. XII.

B पित्तं पङ्गुः कफः पङ्गुः पङ्गवो मलधातवः ।
वायुना यत्र नीयन्ते तत्र गच्छन्ति मेघवत् ॥ शार्ङ्गधर

Inert is Pittam, inert is Kaphah, inert are the Malas & Dhátus Like clouds, they go wherever they are carried by the Váyu.

Pittam :—The function of the Pittam consists in metamorphosing the chyle, through a graduated series of organic principles, to a protoplasmic substance like sperm in men, and the ovum in women. Thus we see that the Pittam of the Áyurveda corresponds to metabolism of Western physiology. But by a confounding carelessness of terms the excreted portion of Rasa and blood though ultimately connected with those normal physiological processes has been respectively styled as the Doshas or defiling principles of Kaphah and Pittam. Again, as in the case of soil, the terms Váyu, Pittam and Kaphah are extended to denote magnetism, kinetic energy and humidity of its molecules. The circulation of blood is connected with the Pittam, while the circulation of lymph chyle (Rasa) is related to Shleshmá the two combinedly forming what is called the sustentative function of the Western Physiology.

The term Pittam, which, by its etymology, signifies the agent of metabolism, has been loosely used by our Áyurvedic physiolgists to denote two different organic principles from an observed similarity in their nature and functions. Pittam in Sanskrit means both bile and metabolism of tissues as well as the bodily heat which is the product of the latter.

Hence a few commentators lean towards the view that Pittam is the heat incarcerated in the bile, and the principal agent in performing digestion (1). The real import of the term may be gathered from the five sub-divisions of the Pittam, made by our Rishis according to their functions and locations, and which are called the **Páchaka, Ranjaka, Sádhaka, A'lochaka** and

(1) द्रवतेजः समुदायात्मकस्यापि पित्तस्य तेजोभागोऽग्निरिति ।
तेन पित्तमप्यग्निवदुपचर्यते । अतितापितायो गोलकवत् ।
परमार्थतस्तु अग्निः पित्ताद्भिन्न एवेति सिद्धान्तः ॥

Madhukosha.

Bhrájaka. All metabolic processes in the organism, whether constructive or destructive, are called Pittam, which is said to be in the products of those processes whether serum, bile, blood, albumen, etc., which are either essential to the substance of the body, or to the proper performance of any organic function. Hence we learn that Pittam is latent in Lasiká (Serum), blood, lymph chyle, albumen etc., and in the organs of touch and sight. In other words, metabolism goes on in those principles and regions of the human organism (1) either as a sustentative or as a cognetic physiological process. First, we have the Páchakágni or the heat of digestion, which is situated in the region between the stomach and the intestines ; (2) and being a liquid fire or fluid heat incarcerated in the secretions of the liver (bile), it is primarily concerned in digesting the four kinds of food (as they meet it in the abdomen). Thus we see that the Páchakágni of our Áyurveda is the same as the bile of Western physiology, its other function being to differentiate (precipitate) the nutritive essence of the food from its unutilisable portion, and to act as an excrementitious matter. It is this Pittam, which makes metabolism in other parts of the body possible, (3) by helping the organism in acquiring fresh energy.

(1) नाभिराश्रयः स्वेदोलसीकारुधिरं रसः ।
दृक्स्पर्शनं च पित्तस्य नाभिरत्र विशेषत ॥

Bágbhat (Sutra Sthánam ch. XII.)

(2) The bile assists in emulsifying the fats of the foods, and thus rendering them capable of passing into the lacteals by absorption *. The bile has been considered as a natural purgative * * * The bile appears to have the power of precipitating the gastric proteoses and peptones, together with the pepsin, which is mixed up with them. * * * As an excrementitious substance, the bile may serve as a medicine for the separation of certain highly carbonaceous substances from the blood.

Kirk's Physiology Ch. XIII. pp 377-378.

(3) तत्रस्थमेवपित्तानां शेषानामप्यनुग्रहम् ।
करोति बलदानेन पाचकं नाम तत्स्मृतम् ॥

Bágbhat Sutra ch. XII.

The second kind of Pittam is called **Ranjaka** or pigment Pittam from the circumstance of its imparting the characteristic colour to the lymph chyle as it is transformed into blood by coursing through the liver and spleen, where it is located (1).

The third kind of Pittam **(Sádhaka)** is situated in the heart, and indirectly assists in the performance of cognitive functions in man by keeping up the rhythmic cardiac contractions (2). Perhaps it is this view of the heart's contraction that predisposed many of our ancient physio-

(1) A. The colouring matter of the bile is derived from and is closely related to that of blood, since the qualities of the bile pigment secreted are markedly increased by the injection of substances into the veins which are capable of setting free hæmoglobin

Kirk's Physiology—(Metabolism in the liver.) Ch. XII. p. 505.

B. There seems to be a close relationship between the colouring matters of the blood and of the bile, and * * between these and that of urine (urobilin) and of the feces—Ibid Ch. VIII. p. 376.

C. It seems probable that the spleen, like the lymphatic glands, is engaged in the formation of blood corpuscles. For it is quite certain, that the blood of the splenic vein contains an unusually large number of white corpuscles. † † † In Kottiker's opinion, the development of colourless and also coloured corpuscles of the blood, is one of the essential functions of the spleen, into the veins of which the new formed corpuscles pass, and are conveyed into the general current of the circulations.

Ibid. Ch. XII.

(2) A. The contraction (of the heart) can not be long maintained without a due supply of blood or of a similar nutritive fluid. * * * The view that is at present taken of the action of the heart is * * that in heart muscle, as in protoplasm generally, the metabolic processes are those of anabolism or building up. which takes place during diastole of the heart * * * and the katabolism or discharge which is manifested in the contraction of the heart. Kirk's Physiology (metabolism of the heart). Ch. VI.

B बुद्धिमेधाभिमानाद्यैरभिप्रेतार्थं साधनात् ।
साधकं हृद्गतं पित्तम् ॥

Bágbhat Sutra. Ch. XII. 13.

logists to hold it as the seat of cognition *(Vuddhi Sthánam).* (1)

The fourth, which is the **Alóchaka** or the Pittam of sight, indicates the metabolic process in the substance of the retina (Drishti) which gives rise to visual sensation. (2)

The fifth is the **Bhrájakágni** or the Pittam in the skin which produces perspiration or helps exudations from the skin by evaporation. In short it is the Pittam which keeps active, under certain circumstances, the secretions from the sweat and sebaceous glands of the human skin.

Kaphah :—Sushruta is one in holding with Foster that "the animal body dies daily, in the sense that at every moment some part of its substance is suffering decay, is undergoing combustion." The etymological significance of the term Shariam (Skr. Shri, to wither up) testifies to his knowledge of the combustion that goes on within the human system. Three kinds of fire are detected in the body, which are sure to feed upon its constituent principles in the absence of proper fuel in the shape of food and air. It is food and the fundamental bodily principle of Shleshmá, which is cooling or watery in its essence, that fly to the rescue of the organism, the latter (Sleshmá) surcharging it with its own essential humidity and keeping intact the integration of its component molecules.

The Rasa, or lymph chyle which is formed out of the ingested food, prevents the internal bodily fires from

(1) The seat of the moon is at the root of the palate and that of the sun is at the root of the navel; the place of the air (or breath) is above the sun, and mind dwells above the moon. Chittam (or the passage between the mind and the spiritual soul) dwells above the sun, and life dwells above the moon.

Jnána Sankalini Tantram, International Journal of Tántrik order (New York) Vol. V. No. 5 p. 109.

(2) It is supposed that the change effected by the light, which falls upon the retina, is in fact a chemical alteration in the protoplasm, and that this stimulates the optic nerve-endings. Kirk's Physiology Ch. XVII.

preying upon the vitals by coursing freely through the whole organism. The Rasa, thus generated, undergoes a sort of purification, the purified portion being called *Prasádabhuta*, and the excreted portion *Malabhuta*, such as are found as effete products deposited in certain pores of the body. Kaphah or Sleshmá is that portion of Rasa which fills all the intercellular spaces of the body, thus holding them together in a kind of cooling embrace (Skr. Slish to embrace) and prevents (1) the dreadful combustion which would otherwise have been caused by organic heat. Our A'chárjas have classified the Kaphah into five different kinds such as the *Kledaka*, *Avalamvaka*, *Vodhaka* and *Shlesmaka* according to their different functions and locations in the economy.

Dosha :—The lymph chyle, born of the digested food, and which courses through the body, potentially contains the elements which build the different tissues of the human organism. Under the influence of metabolic heat it is progressively transformed into blood, flesh, fat, bone, marrow, semen and *Ojah*. In other words, under the process of physiological metamorphosis, the lymph chyle sets free that part of its constituents (2) which possess blood-

(1) A श्लेष्माग्निसादनः—Bágbhat.

B तस्मात्तं विधिवत्युक्तैरन्नपानैन्धनैर्हितैः।
पालयेत् प्रयत्नस्तस्य स्थितौह्यायुर्वलस्थितिः॥

Charaka Chikitshásthánam. Chap. 15.

(2) A. केदारेषु यथाकुल्याः पुष्णन्ति विविधौषधीः।
तथाकलेवरे धातुन् सर्व्वान् वर्द्धयते रसः॥

Bháva Mishra.

B. खले कपोतन्यायेनाहयसन्नरसः पृथक् पृथक् धातुमार्गं गतः सन् रसादीन् पोषयति। * * एवं रसपोषणकालादुत्तरकालं रक्तपोषकमार्गचारित्वात् रक्तपोषको रसभागो रक्तं पोषयति। * * * एवं मांसमेदप्रभृति पोषणऽपिज्ञेय।
Chakra Datta's commentary on the Charaka Samhitá. Sutrasthánam. Cr. XXVIII.

making properties, and are ultimately transformed into blood—(its unutilised or excreted portion being eliminated through the natural apertures of the body), and so on, through the progressive series of metabolism to *Ojah Dhátu.* Thus with the derangement of the bodily Váyu which causes the free coursing of the lymph chyle through its vessels, the Pittam (metabolism of tissues), in any particular part of the body, is also affected by reason of its incarceration, and thus causes an increase or diminution in the excreted portion of the Rasa, which is another name for Kapham during the progressive metabolism. Thus we see that Váyu, Pittam, and Kaphah, which, in their normal state, are the three supporting principles of the body are transformed into morbific diathesis by increasing or diminishing the bodily heat, secretions, or excretions.†

Thus congestion and inanition (atony) are the two main forms of disease recognised by the A'yurvedic Pathologists, the former being held amenable to resolution or elimination, and the latter to local feeding or nourishment.

Agni and Dhátvagnis :—We can not better conclude this portion of our dissertation than by speaking a word or two about Agni. Sushruta raises the question whether there is any kind of fire in the human organism other than the Pittam : or are they identical ? Sushruta holds that the Pittam is the only fire present in the system, in as much as all acts from the digestion of food to the disintegration of tissues are performed with the help of the Pittam, which includes within its signification what is connoted by Anabolism and Katabolism of Western Physiologists. But Agnivesha and certain sections of the A'yurvedic A'charyayas hold that there

† A धातवश्च मलश्चापि दुष्यन्त्येभिः यतस्ततः ।
वातपित्तकफा एते त्रयो दोषा इति स्मृताः ॥
Bhávaprakásha Part I.

B वायुपित्तं कफश्चोक्तः शारीर दोषसंग्रहम् ।
Charaka Sutrasthánam Chap. I.

are five Anjali-fuls of Agni (1) in the human organism. This discrepancy is best explained away by including one Yava measure of Agni (enzymes, ferment) in the five Anjali-measures of Pittam.

The Áyurvedic Physiology recognises the existence of another kind of Agni, which is called **Dhátvágni** (protoplasm) and which it classifies into seven different kinds. Arunadatta, the celebrated commentator of the Ashtánga-hridayam, holds that there are as many Dhátvágnis *as the constituents of the body.* (2)

(1) पञ्च पित्तस्य—Charaka Samhitá.

(2) A एवं पाञ्चभौतिका अग्नय:—एक उदराग्नि:, सप्तधात्वग्नयो वक्ष्यमाना इति त्रयोदशाऽग्नय:। ननुपार्थिवाद्याभि: पक्वस्य पुन: धातुष्माभि: पाक धातुनामपि पाञ्चभौतिकत्वात् तत्रापि पार्थिवाद्यभाव:। तैश्च पार्थिवाद्याभि पुन: पाक:। Arundatta.

B. तथा सप्तसु सिराशते सप्तोऽग्निशतानि।
पञ्चसु मांसपेशी शतेषु च पञ्चाग्निशतानीति॥ Ibid.

C. तेजो रसानां सर्व्वेषां मनुजानां यदुच्यते।
पित्तोष्मण: स रागेण रसो रक्तत्वमृच्छति॥
वाय्वम्बुतेजसा रक्तमुष्मणा चाभिसंयुतम्।
स्थिरतां प्राप्य मांसं स्यात् स्वोष्मणा पक्वमेवतत्॥
स्वतेजोऽम्बुगुणस्निग्धोद्रिक्तं मेदोऽभिजायते।
पृथिव्याग्न्यानिलादीनां संघात: स्वोष्मणाकृत:॥
खरत्वं प्रकरोत्यस्य जायतेऽस्थि ततोनृणाम्।
करोति तत्र शौषिर्य्यमस्थ्नां मध्ये समीरण:॥
मेदसास्थीनि पूर्य्यन्ते स्नेहो मज्जा तत: स्मृत:।
तस्मात् मज्ज्ञस्तु य: स्नेह शुक्रं संजायते तत:॥
वाय्वाकाशादिभिर्भावै: शौषिर्य्यं जायतेऽस्थिषु।

Charaka Samhitá, Chikitsásthánam, Chapter XV.

D. सप्तभिर्देह धातारो धातवो द्विविध पुन:।
यथास्वमग्निभि: पाकं यान्ति किट्ट प्रसादत:॥

Vid Ibid Chap. XX.

The commentator of the Chhándagya Bhásyam has emphasised the identity of the Pittam and the solar heat. In fact it was a doctrine of faith among the Rishis that the solar heat pent up in the solids is transformed into organic heat (Bhutágni) which, becoming liberated in the stomach, produces the heat of digestion. (1) All these are but different forms of solar heat. The Dhátvágni and Udarágni lie inert in the organism. It is the Váyu that sets them free and makes them operative.

The Dhátvágnis (protoplasm) of the muscle are not of the same kind as that of the arteries. We cannot resist the temptation of quoting a few lines from Foster's physiology on the subject.*

(1) A. दध्नः सौम्य यथा मथ्यमानस्य योऽणिमा स ऊर्द्ध्वं समुदीषति एव सो खलु सौम्य अन्नस्याश्यमानस्य ।

Chhándogya Upánishad.

B. अन्नस्य ओदनादेरश्यमानस्य भुज्यमानस्य औदर्य्येन अग्निना वायु सहितेन खजेन इव मथ्यमानस्य ।

Chhándogya Bhásyam.

* These facts and other considerations, which might be brought forward, lead to the tentative conception of protoplasm as being a substance (if we may use the word in somewhat loose sense) not only unstable in nature but subject to incessant change, existing indeed as the expression of incessant molecular, *i. e.* chemical and physical change, very much as a fountain is the expression of incessant replacement of water. We may picture to ourselves the total change, which we denote by the term "metabolism," as consisting on the one hand, of a downward series of (Katabolic changes) a stair of many steps in which the more complex bodies are broken down with the setting free of energy into simpler waste bodies, and, on the other hand, of an upward series of changes (anabolic changes) also a stair of many steps, by which the dead food of varying simplicity or complexity is with further assumption of energy built up into more and more complex bodies. The summit of the double stair we call "protoplasm" whether we have right to speak of it as a single body in the chemical sense of that word or as a

From what has now been stated regarding the functions and significations of the **Váyu, Pittam** and **Kaphah,** it will appear that the Ácháryayas of the Áyurveda contemplated three different sets of principles in the domains of Biology and Pathology. Váyu, Pittam, and Kaphah are

mixture in some way of several bodies. Whether we should regard it as the very summit of the double stair, or as embracing as well as the topmost steps in either side, we can not at present tell. Even if this be a simple substance forming the topmost summit, its existence is absolutely temporary, at one instance it is made. at the next it is unmade matter, which is passing through the phase of life, rolls up the ascending step to the top and forthwith rolls down on the other side * * *

Further the dead food itself fairly, but far from being wholly stable in character, becomes more and more complex living material. It becomes more and more explosive and when it reaches the summit its equilibrium is over-thrown and it actually explodes. The whole downward stair of events seems in fact to be a series of explosives by means of which the energy latent in the dead food and augmented by the touches through which the dead food becomes living protoplasm, is set free. Some of those freed energy is used up again by the material itself, in order to carry on this same vivification of dead food, the rest leaves the body as heat or motion.

If this be admitted it almost inevitably follows, that what we have called protoplasm. can not be always the same thing : that there must be many varieties of protoplasm with different qualities and with corresponding different molecular structure and composition. Using the word "protoplasm" in this sense, it is obvious that the varieties of protoplasm are numerous indeed, almost innumerable. The molecular protoplasm, which brings forth a contractile katastate must differ in nature, in composition, that is in construction from glandular protoplasm where kata-state is a mother of ferment. Further the protoplasm of a swiftly contracting striped muscular fibre must differ from that of the torpid, smooth, unstriated fibre, the protoplasm of a human muscle must differ from that of a sheep or a frog, the protoplasm of one muscle must differ from that of another muscle, in the same kind of animal, and the protoplasm of Smith's biceps must differ from that of Jone's—Foster.

called *Dhátus* or fundamental principles of the economy, when in virtue of their correlative and sustentative functions, or with the help of their subservient processes of metabolism and lymphatic circulation, they ensure an equipoise among the different vital and physiological processes in the whole economy which is essential to its perfect health. Biologically considered they are but the primary subtle dynamics of organic life, or as Sáyana expresses it, the three fundamental principles of the body.* But when this healthy equilibrium is disturbed either through the agency of any extrinsic or idiopathic factor, when any one of them is abnormally augmented or dominates the other two, thus altering their mutual relation in the economy, naturally certain pathological conditions arise which form the *esse* of a disease; † or in the parlance of the A'yurveda they are said to have been transformed into **Doshas** or morbific diathesis. Even blood, which, according to our A'cháryayas, forms one of the fundamental principles (Dhátu) of the organism, may be designated as a *Dosha* (morbific diathesis), when owing to its congestion in any particular organ or member of the body, it brings about a disturbance in its general vascular system and produces pathological conditions which are offshoots of its own deficient or disturbed circulation. They are denominated as **Malas**, ‡ when observed still in grosser or superficial principles of the organism producing those excretions, or organic *lesions* which appertain to the sphere of morbid Anatomy. Thus we see that the A'yurvedic principles of Váyu, Pittam and Kaphah embrace both the biological and pathologi-

* त्रिधातु शर्म्म वहतं । वातपित्तकफ शमनविषयसुखं वहतं ।

Sáyana's Commentary Rig V. I A.

† धातुवैषम्यनिमित्ता: व्याधय: ।

Charaka.

‡ शरीरदूषणाद्दोषो धातवो देहधारणात् ।

वातपित्त कफा ज्ञेया मलिनी करणान्मला: ॥ शार्ङ्गधर ।

cal principles of the organism ; or in other words, the A'yurvedic physiology elucidates and investigates the causes through which the same principles, which sustain life and the organism, are transformed into the dynamics of disease, lastly pointing out the grosser excretory changes and organic lesions in the external or superficial plane of existence, which form the subject of morbid anatomy and are sometimes confounded with the disease itself. In the Váyu, Pittam and Kaphah of the A'cháryayas we have at once a complete picture of the finer sustentative forces of the human economy as well as their antithesis, the constructive as well as the expulsive forces of the inner man, together with an exhaustive analysis of their grosser products which legitimately fall within the sphere of morbid anatomy. A real knowledge of the nature and functions of the Váyu, Pittam and Kaphah may be useful in giving a deeper and clearer insight into the principles of true biology or pathology. It is incorrect to translate Váyu, Pittam and Kaphah as air, bile and phlegm, except under certain circumstances. Váyu, Pittam and Kaphah are air, bile and phlegm only when they are transformed into *Malas* or grosser organic excretions which are supposed to be so very intimately connected with factors, pathogenetic or pathological, but they are not air, bile and phlegm in those planes of their functions which determine the genesis, growth and continuance of the organism, as well as its death, decay and disintegation. The knowledge of a region without that of its antipodes is but a half knowledge, and the principle of Váyu, Pittam and Kaphah is the only one of its kind that tries to embrace the whole sphere of organic existence.

Ojah-Dhátu :—From what has been stated before it will appear that during the process of tissue-formation, the lymph or chyle, under the influence of Pittam, or metabolic heat, is transformed into the same, the refuse or un-utilisable portion of it being passed off through the

apertures of the body, as excretions. The Ojah-Dhátu is present in the reproductive energy that lies latent in every organic principle, viz. lymph, blood, muscles, bone (synovia), marrow, and in the male & female reproductive elements. Hence it is not a matter of surprise when we find in Áyur-vedic works this Sóma, or Ojah-Dhátu mentioned as lying diffused in the human organism and described as the essence of the lymph chyle, blood, &c. (1). The terms Rasagata Ojah, Raktagata Ojah are therefore used perhaps in the sense of modern serum-albumen, blood-albumen, &c. The male & female reproductive elements, according to this view, form the essence of the body as a whole, and the Ojah, which is abundantly found in these protoplasmic cells, is the quintessence of a quintessence. The muscle of the heart alone, according to Charaka, is chiefly associated with this energetic substance, which is of a bloody yellowish colour &. possesses both cooling & heat-making virtues. (2)

In diseases caused by defective assimilation it is said to be ejected through the kidneys and to pass off with the urine (as in certain types of Prameha) (3), whereby the patient gradually loses strength, flesh, and healthy glow of complexion inasmuch as these are but the accompaniments of its

(1) ओजस्तु तेजोधातूनां शुक्रान्तानां परं स्मृतम् ।
हृदयस्थमपि व्यापि देहस्थितिनिबन्धनम् ॥

Vágbhat.

(2) हृदि तिष्ठति यच्छुभ्रं रक्तमीषत् सपीतकम् ।
ओजः शरीरे संख्यातं तन्नाशान्ना विनश्यति ॥

Charaka (Sutra Sthánam) Ch. XVII.

(3) A. तैरावृतगतिर्वायुरोज आदाय गच्छति ।
यदा वस्तिं तदा कृच्छ्रो मधुमेहः प्रवर्त्तते ॥

Charaka (Sutra Sthánam) Ch. XVII.

B. ओजः पुनर्मधुर-स्वभावं, तद्रौक्ष्याद् वायुश्च कषायत्वेन अभिसंसृज्य मूत्राशयेऽभिवहन् मधुमेहं करोति ।

Charaka (Shárira Sthánam) Ch. IV.

healthy continuance in the human organism. "Health and strength," observes our Rishi," reside latent in the Ojah-dhátu, as butter (Ghritam) lies latent in milk. (1)

Dallana Mishra, the celebrated commentator of the Sushruta Samhitá, has defined Ojah as a fatty substance completely combustible in its character. Thus in the course of tissue combustion its excess quantity is deposited especially in the female body as fat which produces that peculiar softness and elegance. (2) The presence of Ojah in urine is said to induce Madhumeha (3). Taking this fact alone into consideration one is inclined to the belief that Ojah must be something of the nature of sugar. As a consequence of these different interpretations of Ojah the question arises whether there is present in the human organism any such common element that produces either of these two important oxidising materials, viz. fat and sugar.

It is a demonstrated fact in modern Physiology that glycogen is found in other tissues and organs besides in the liver. Tissues of embryos and of young animals as well as newly formed pathological growths may be said to contain glycogen. The activity of the heart, as well as the development of the fetal body (4) is largely dependent

(1) A. ओजः सर्व्वशरीरस्थं स्निग्धं शीतं स्थिरं सितम् ।
सोमात्मकं शरीरस्य वलपुष्टिकरं मतम् ॥
Bhávaprakásha. Part I.

B. क्षीरे घृतमिव तद्देव वलम् ।
Bhávaprakásha.

(2) तेजोऽप्याग्नेयं क्रमशः पच्यमानानां धातूनामभिनिर्वृत्तमन्तरस्थं स्नेहजात वसाख्यं स्त्रीणां विशेषतो भवति तेन मार्द्दवं सौकुमार्य्यं भवति ।
Dallana Mishra.

(3) See Note 3 (B) Page iiv.

(4) यत् सारमादौ गर्भस्य यत्तद्गर्भरसाद्रसः ।
संवर्त्तमानं हृदयं समाविशति यत् पुरा ॥
Charaka Sutrasthánam, Chap. XXX.

upon this Ojah-dhátu which may be best translated as glycogen in the parlance of Western physiology. In fact, our Áchâryayas have used the term "ojah" to denote that vital principle in the organism which is essential to the maintenance of a healthy combustion in its tissues and to the due performance of their normal functions and activities, no matter whether that principle is patent in the form of protoplasm, protoplasmic albumen, glycogen or mucosin (Prákrita shleshmá)* in accordance with the difference of their functions, geneses, and conditions of protoplasmic metabolism. In short, they were cognisant of the fact that fat and sugar are evolved out of a common basic principle in the organism as has been very eruditely demonstrated by Dr. S. N. Goswámi, B. A., L. M. S. in his treatise on Pumsavanam †
It is far from our intention to thrust this opinion on any one ; we have simply stated our conclusion in the matter and will welcome the result of fresh enquiries on this subject.

* A. प्राकृतस्तु बलं श्लेष्मा विकृतो मल उच्यते ।
स चैवौजः स्मृतं कार्ये स च पाप्मोपदिश्यते ॥

Charaka Samhitá Sutrasthánam, Chap. XVII.

B. दहनस्यापि धात्वग्नावबकल्पं स्थानविशेषात् कार्य्यविशेषाच्च ।

Chakradatta's Commentary S. Samhitá, Sutrasthánam Chap. XV.

† "From these extracts it appears to us still more vividly that our countrymen did also discover, like Dr. Pavy, the importance of fat and sugar in the animal economy, as well as the mode in which they can be elaborated from one common principle. (76-78). A comparative study of the two systems of medical science, Indian and European, has led us to arrive at this conclusion ; if we, therefore are not inclined to identify Ojah with albumen, as it has been done by some modern Indian commentators, we have reasons to believe that the aforesaid extracts have not as yet received sufficient consideration from them, as forming the nutritive basis of the procreative elements ; in short the subject has hitherto been neglected or, at least, been placed in the back-ground, rom want of attention on the part of those whose business it was to investigate into the truths of Science. To hold that Ojah is kept in deposit in the heart, as a reserved food material, for the maintenance of its own work

Space does not permit us to give here even something like a satisfactory synopsis of the physiology of Sushruta. It is enough for our purpose if we can create for our readers an interest in the various physiological problems discussed by our author in this part of his work, or in his description of the various physiological processes, which are essential to the healthy continuance of human economy. But if Hindu physiology is startling in its demonstration of the

as well as for the production of germinal seed, is to admit that efficiency of reproduction depends entirely upon the efficiency of this important substance in the body."

(76) गुरुस्निग्धाम्ललवणान्यतिमात्रं समश्नताम्।
नवमन्नञ्च पानञ्च निद्रामास्यासुखानि च ॥
त्यक्तव्यायामचिन्तानां संशोधनमकुर्व्वताम् ।
श्लेष्मा पित्तञ्च मेदश्च मांसञ्चाति प्रवर्द्धते ॥
तैरावृतगति र्वायुरोजश्चादाय गच्छति ।
यदा वस्तिं तदा कृच्छ्रो मधुमेहः प्रवर्त्तते ॥ चरकः

(77) घृतं यथा कृत्स्नक्षीरस्नेहः
तथैव तेजोऽपि कृत्स्नधातुस्नेहः । डल्लनमिश्रः

(78) तेजोऽप्याग्नेयं क्रमशः पच्यमानानां
धातुनामभिनिर्वृत्तमन्तरस्थं स्नेहजातं वसाख्यम्
स्त्रीणां विशेषतो भवति तेन मार्दवं सौकुमार्य्यं भवति ।

—Ibid.

76. Those who partake of heavy and cooling food abounding in acids and salts, of new rice, and beverages, or constantly enjoy sleep and luxuries, or neglect the exercise of body and mind, or who habitually abstain from the use of corrective medicines, help to accumulate in their bodies phlegm, bile, fat and flesh ; and these interfere with the functions of the Váyu, which causes the Ojah to be displaced from its proper place down in the bladder and produces glycosuria.

77. As Ghee pervades the whole of milk, so Teja (ojah) permeates all the tissues of the body.

78. Teja (Ojah) too is combustible ; in course of tissue-combustion, the excess quantity of it gets deposited especially in the female body as fat which produces softness and elegance.

fact that growth is not the only condition of life, that vitality is somewhat independent of the physiological processes, that the inner man, with the help of Yoga, can long survive even without food and respiration,* and that death and decay may be arrested to a considerable degree by completely stopping many of those physiological processes in the body,† which are considered so very essential to living by the savants of the West, then Hindu pathology is unique in its conception of the nature of disease.

Sushruta's Pathology :—What is it in a man, asks Sushruta, that falls sick ? What is that that we treat medicinally ? The body or the mind ? Sushruta says that, "anything that afflicts the inner man (self or Purusha) is disease‡ and that disease has its primary seat in the inner spring of vitality from which it flows out to the surface, the external body". In man, as in everything else in the universe, the direction of the inherent force is from the centre to the circumference. The shock is felt first at the centre of vitality, whence it is transmitted outwards and thus affects the energy which holds the molecules together, Dvyanuks and Tryanuks (Binary and tertiary atoms) of which the gross body is composed, and further opposes the dissolution of those molecules into their elemental constituents in the living organism. Even in cases of external injuries such as snake-bite, etc. the potency of the virus is carried at once to that centre from whence it is almost instantaneously transmitted through the external channels of the body to its surface,

* कण्ठकूपे क्षुत्पिपासा निवृत्तिः ।
कूर्मनाड्यां स्थैर्यम् ।

Pátanjala Darshanam Vibhutipáda 29—30 A.

† सोपक्रमं निरुपक्रमञ्च कर्म्म तत्संयमाद परान्तज्ञानमरिष्टेभ्योवा ।

Pátanjala Darshanam. Vibhutipáda. 21. A.

‡ तस्मात् पुरुषोऽधिष्टानम् । तद्दुःख संयोगाश्च व्याधय इत्युच्यन्ते ।

Sushruta samhitá. Sutra. Chap. I.

otherwise what purpose does the váyu (nerve force) serve in the human economy? What do those myriads of Chaitanya-váhini Nádis (sensory nerves) exist for in the human system? In all diseases the subjective sensations are the first to be experienced. "I am ill," "I feel hot," etc. are the voices of sensations, which form the "esse" of the disease. Disease then is a force and not matter.*

Pathology of Tridosha :—Sushruta, though adopting the Vedic pathological dictum of Tridhátu, has expressed a very clear opinion on the subject. He observes that the relation between a disease and the deranged Váyu (nerve force), Pittam (metabolism) and Kapham (unutilised product of the system), and the pathogenic factors which lie at the root of that disease, is not real but contingent. These morbific principles may permeate the whole organism without creating any discomfort, and it is only when they find a distinct lodgment, and are centred in some distinct part or tissue of the body, that they become the exciting factors of disease.

Drug Potency :—The next question which naturally arises in connection with such a theory of pathogeny, is what is medicine, or in other words, what is it in the drug that cures! Sushruta, after closely investigating all the theories on the subject, inclines towards the opinion that it is the potency of the drug that is curative, though he observes that inasmuch as potency cannot exist independently of a drug, a drug is of primary interest for all practical purposes in therapy.

Drug-Dynamisation :—"It is the potency of a drug that cures a disease". The potency is administered best

* That Hahnemann's theory of disease was long before foreshadowed by Sushruta, will appear from the above extracts from his works. Hahnemann observes that, when a person falls ill, it is only this spiritual self-acting vital force, everywhere present in the organism, that is primarily deranged by the dynamic influence of a morbific agent inimical to life—Orgenon.

when the physical or chemical properties of a drug are annihilated. This is best performed by subjecting it to heat or pressure. In the medicated Ghritas or oils of our pharmacopœa, which are prepared by successively boiling or cooking them with drug-decoctions, we cannot even detect the trace of any of its component drugs, but still we know how potent and efficacious they prove in the hands of our Vaidyas. When Sushruta formulated the process of preparing medicinal oils and Ghritas, and laid down the use of Shatadhautam Ghritam (clarified butter, a hundred times washed with water in succession), Sahasrapák Tailam (medicinal oil, successively cooked a thousand times), or Kumbha-Ghritam (clarified butter, a hundred years old) it may be fairly said that he was in sight of the principle of drug-dynamisation.

Principles of A'yurvedic Treatment:—A'yurvedic physicians practically recognise two different sets of principles in the domain of practical therapeutics, which may be stated in the terms of their western colleagues as Laws of Similars and Contraries.* This apparent contradiction has been fully accounted for and explained in the writings of the latter day commentators, but it does not fall within our province to enter into these disquisitions. In addition to those, Sushruta, in common with the A'cháryayas of his time, never fails to emphasise the value of psycopathy in

* Similar in character to the exciting factors of a disease—Similar in character to the *Esse* of a disease—Similar in character both to the exciting actors and *Esse* of a disease.

Contrary in character to the exciting factors of a disease.
Contrary in character to the *Esse* of a disease.
Contrary in character both to the exciting factors and *Esse* of a disease.

हेतुव्याधि विपर्य्यस्त विपर्य्यस्तार्थकारिणाम् ।
औषधान्नविहाराणामुपयोगं सुखावहम् ॥

Mádhava Nidánam Ch I. V. 8.

those forms of mental or nervous distempers for which Mesmer rightly now receives so much honor. Since the creation of man, the touch of the "Saintly" has been credited with the virtue of curing the sick; and A'vesha (auto-hypnotism) and Samádhi (higher phases of clairvoyance) have achieved many miracles in the art of healing in India, which was the first country where it was first successfully practised for the welfare of man.

Samshodhanam and Samshamanam :—All kinds of treatment may be grouped under two heads such as Samshodhanam and Samshamanam, *i.e.* either the body should be cleansed (Samshodhitam) of the morbific diathesis with the help of emetics or purgatives, or steps should be taken to restore the deranged Váyu, Pittam and Kapham to their normal condition with the help of proper medicinal drugs without resorting to any eliminating process. But in cases of inflammation, Sushruta enjoins that, instead of any Samshamanam remedies, diaphoresis should be first resorted to. In cases where counter-irritants are indicated and in parts which are directly accessible, leeching and cauterisation should be practised with a due regard to the season of the year and the requirements of the case. We find in his Samhitá a detailed account of the several species of leeches with their habits and habitats.

Forms of medicine:—Powders, lambatives, decoctions as well as medicated oils, Ghritas, confection and wines are the forms in which, according to Sushruta, medicines should be given. The different drugs such as roots, leaves, etc. should be culled in the seasons proper to each. He classified the soil into five different kinds for the purpose of growing drugs of different therapeutic properties. Even the virtues of different flavours and colours were ascertained with regard to their respective actions on the deranged morbific principles of the body.

Rasáyanam :—The A'yurveda being the science of life and health, the holy Agnivesha, at the very commencement

of the therapeutical portion of his work, * has described several medicinal compounds, which improve general health and arrest the ravages of time. Theoretically speaking the science of the Áyurveda recognises no preordained limit to human existence. Life can be prolonged with the help of suitable medicines. By dint of observation and patient researches our Rishis devised many such adjuncts which can rejuvenate an old man, and supply those vital elements to an old and exhausted human body, which ebb away with the progress of years. Hence, we find many rejuvenating medicines to have been prescribed for men in health which would arrest decay and guard against the approach of senility by increasing the fundamental vital principles of the body and preventing Váyu, Pittam and Kapham from being transformed into morbific diatheses.

Diet—"A good and proper diet in disease is worth a hundred medicines and no amount of medication can do good to a patient who does not observe a strict regimen of diet." Our Áyurveda, instead of being content with specifying the nature of diet in diseases in general, mentions the names of articles, which should, or should not be taken in any specific malady, judged by the light of their properties of aggravating Váyu, Pittam or Kapham. The dietic or therapeutic properties of a large number of articles of human consumption, as well as the chemical changes they undergo in the digestive apparatus of different mammals, have been studied and analysed, and so we find in our physique, medical Samhitás, such injunctions that barley-corns passed undigested with the fæces of a cow or

* दीर्घमायुः स्मृतिं मेधामारोग्यं तरुणं वयः ।
प्रभावर्णस्वरौदार्य्यं देहेन्द्रियबलं परं ॥
वाक्सिद्धिं प्रणतिं कान्तिं लभते ना रसायनात् ।
लाभोपायो हि शस्तानां रसादीनां रसायनं ॥

Charaka Samhitá Chikitsá Sthánam Ch I.

horse, should form the diet of a Prameha patient * that the milk of a she-camel should be given to a patient suffering from a cutaneous affection, and that the flesh of any carnivorous beast or bird should be given to one suffering from pulmonary consumption and so on. It was a cardinal doctrine with A'yurvedic dietists that the longing of a patient for any particular kind of food in a certain disease, emphatically shows that his organism is in want of those elements which enter into the composition of the article offered. Hence elaborate dietetics were formulated, which cannot but be acceptable to the most fastidious patient.

Therapeutics:—The exclusion† of salt and water from the food of an ascites or anasarca patient as laid down in our Samhitás shows that our Rishi possessed a higher chemical knowledge regarding the effects of organic matter on the human system than many of us are ready to accord to these pioneers in medical science.

Medical Botany:—After therapeutics comes the subject of Medical Botany. Sushruta divides the whole vegetable

* खराश्व गोधेनुक संभृतानां, तथा यवानां विविधाश्च भक्ष्याः।
देयास्तथा वेणुयवा यवानां, कल्पेन गोधूममयाश्च भक्ष्याः॥

Charaka Samhitá, Chikitsá Sthánam. Ch. VI. 23.

† The efficacy of such exclusion has been lately demonstrated by the researches of Dr. Benjamin Horniman (Lectures, Sanitarium, Park st. London.)

† A. तथोष्णा लवणाम्लानि विदाहीनि गुरूणिच।
नाद्यादन्नानि जठरी तोयपानञ्च वर्ज्जयेत्॥

Charaka Chikitshá Sthánam Ch. XIII.

B. मूत्राण्यष्टावुदरिणां सेके पाने च योजयेत्

Ibid Chap. 13.

C. सप्ताहमौष्ट्रन्त्वथवापि मासं पयः पिवेद्भोजनवारिवर्ज्जी।
गव्यं समूत्रं महिषीपयो वा क्षीराशनं मूत्रमथो गवां वा॥

Charaka Chikitshá Sthánam Chap. 12.

kingdom into Vriksha, Gulma, Vanaspati and Virudha. This classification has been minutely worked out in works on Hindu Botany where we find such nice subdivisions as Agrâvija (whose toplings are only planted), Mulaja (whose roots only are planted), Parnayoni, Skandaja, Vijaruha (germinated from seeds) and Sannurudhaja. But the botany of Sushruta is more of the nature of a Materia Medica than a work on Botany proper, though sometimes he mentions the habitat and describes the foliage of certain plants so that they may be distinguished from others of a cognate species.

The uses of metals and minerals for therapeutical purposes in India are as old as the Rigveda * itself. Sushruta describes the methods of preparing oxides, sulphates or chlorides of the six metals as the case may be. Mercury has been only once mentioned in the Samhitá and then very vaguely too. Processes for the preparation of alkalis and the lixiviation of ashes are very elaborately described. Beyond these the chemical knowledge of Sushruta scarcely extends.

Hygiene and Public Health:—As a writer of Hygiene and public health, Sushruta emphasises the importance of cleanliness of both spirit and body. Water whose disinfecting virtues have so often been hymnised in the Vedas † forms the subject of discussion of an entire chapter of the Samhitá. Outbreaks of epidemic have been attributed to contrary seasons, to the floating of minute particles of poisonous flower pollen in the air, and to the sin or unrighteous conduct of the community. Earthquakes, famines, and physical phenomena, which are at present attributed to magnetic disturbances of the earth, have been

* Lead crystals (including diamond) gold and mineral poisons are mentioned in the I. 16. I. 29. I 55. and IV 10. of the Atharva Samhitá.

† अपस्वंतरमृतमप्सु भेषजमपामुत प्रशान्तये ॥

Rik Samhitá I. 23 s. 19.

described by Sushruta as the usual precursors of devastating epidemics such as plague etc. Mortality among birds and an unusual death among rats and other burrowing rodents have been included among other presaging indications of a visitation by Providence. Interrogated as to the cause of such outbreaks, Dhanvantari observes that, the Váyu (molecular energy) of the soil is disturbed or affected by earthquakes, and seasons of unnatural drought or deluge, deranging their Pittam (kinetic energy) and Shleshmá (humidity) which produce morbific factors that affect a whole community. Sushruta, as a true physician, has elaborately dealt with the regimen of diet and conduct during the different seasons of the year (Ch. 24 – U. T. 64) which, strictly followed, should act as a good prophylaxis against attacks of many epidemic diseases, being framed with a most careful regard to the conditions of life which obtain in it, and ward off those sad breakdowns in health, which are, in many instances, the result of an unsuitable mode of living in this country.

Twofold division of Time &c :—It is a fundamental dictum of Sushruta that in a case of medical treatment the then prevailing season of the year should be taken into account. In his Samhitá we find two distinct classifications of seasons, one based on the peculiar physical phenomena which distinguish the different seasons of the year, a fact which emphatically proves that Sushruta was an inhabitant of the sub-Himalayan Gangetic Doab, the other is for the purpose of showing the respective accumulation, aggravation and subsidence of morbific diatheses (Doshas). In the same manner the different quarters of the day and night have been minutely charted or set down to show the spontaneous aggravation and subsidence of the deranged Váyu, Pittam and Kaphah during the 24 hours. The influence of planets as to the production of certain diseases such as small-pox, measles, scarlet fever, &c. is almost a proved fact. As it governs the prevalence and non-prevalence of certain maladies, the aggravation and

non-aggravation of certain existing disorders as well owe much of their origin to this potent factor. The vegetable kingdom from which we glean our daily food is also subject to this influence, and hence the discrimination we exercise in selecting our food on certain days of the lunar month.

Countries have been divided into Jángala or A'nupa according as their physical features partake of the character of a dry plateau or of a swamp or marsh, a Sádhárana one possessing features, which are common to both. Diseases, which are natural or are spontaneously relieved in each of these kinds of country have been treated with that scientific insight which marks modern medical works on sea-side or spring sanitariums. The virtues of the waters of different rivers of India were ascertained for the purposes of practical therapeutics. The therapeutic properties of the milk of a she-goat, she-buffalo, mare, cow-elephant, or woman, as well as of any of their modifications such as curd, whey &c. together with the properties of the flesh and urine of the several groups of she-animals, which are indigenous to the land, were studied and analysed, thus placing at the disposal of a practical physician a list of dietary in different diseases to soothe the taste of the most fastidious patient, and which is at the same time potent enough to cure the distemper he is suffering from without the help of any special medicine. Thus it is that we find our Vaidyas prescribing the flesh of many carnivorous animals as a diet in consumption, goat's meat in phthisis, goat's milk in colitis and Tittira's flesh in fever &c.

Diseases of the Kidneys and Bladder:—In treating of the diseases of the kidneys, bladder and the urethra, Sushruta has described the symptoms and the colour of the urine in each specific variety without laying down any mode of testing the urine. But we know that Sushruta has enjoined his readers at the very outset of his work to refer to other allied branches of the science for information which is not contained in his book. In the same manner

we can account for the absence of any instructions as regards the feeling of the pulse as an important auxiliary in making a correct diagnosis. We need but repeat the statement that the readers of this Samhitá must look for this information in the Kanáda's Nádi Vijnánam, which has made our Vaidyas such expert sphygmologists.

Kalpa:—In the Kalpasthánam of his Samhitá, Sushruta has described the symptoms of hydrophobia and snake bites, etc. as well as those developed in cases of vegetable poisoning, together with their therapeutical treatment and remedies, which, if rightly studied and investigated, may yet throw a new light upon the subject.

Sushruta as an Observer :—It has been lately discovered by a German physiologist that tubercular bacilli do not thrive in goat's blood. The importance of goat's milk in colitis as an efficient agent in checking ferment in the intestines, or of the close contact of a goat as a powerful auxiliary in curing tuberculous phthisis was first demonstrated by Sushruta. Not only this—but the inhalation of the air of a cattle-shed and especially the fact that exhalations of goats, bodies tend to destroy the phthisis germs did not fail to attract the attention of the Indian Rishis ; the fumigation of the sick-room with antiseptic preparations such as अष्टाङ्गधूप (Asthánga dhupas) is purely Indian in its origin and in no way inferior to the modern introduction of Cogghill's respirators. The microscopic germs that are said to propagate septic fever otherwise called भूताभि षङ्गोत्थ विषसज्वर are found very often to disappear under this Indian device where no medicines produce any impression. Thus many a wonderful discovery like the above hails from the dimness of a bygone age. Many truths lie embedded in the vast medical literature of the Bráhmanas which claimed close attention and devout study, even by the western savants. We have not laboured in vain if these pages can help a little to revive the old genius of the Áyurveda, or help the progress of human Science one step onward towards the attainment of its goal.

PLATE No. I.

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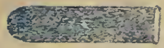
PLATE No. II.



15. Shamipatra yantra.

16. Shalaká yantra.

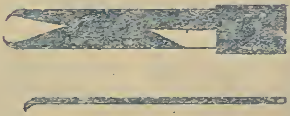
17. Sharapunka mukha.

18. Sinhamukha yantra.

19. Shvanamukha yantra.

20. Shanku yantra.

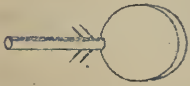
21. Snuhi yantra.



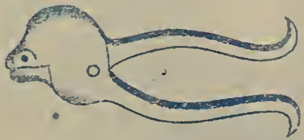
22. Tála yantra.

23. Tarakshumukha.

24. Vrikamukha yantra.



25. Vrinaprakshalana yantra.



26. Vyaghramukha yantra.

27. Yugmashanku yantra.

28 Yonyavekshana yantra.

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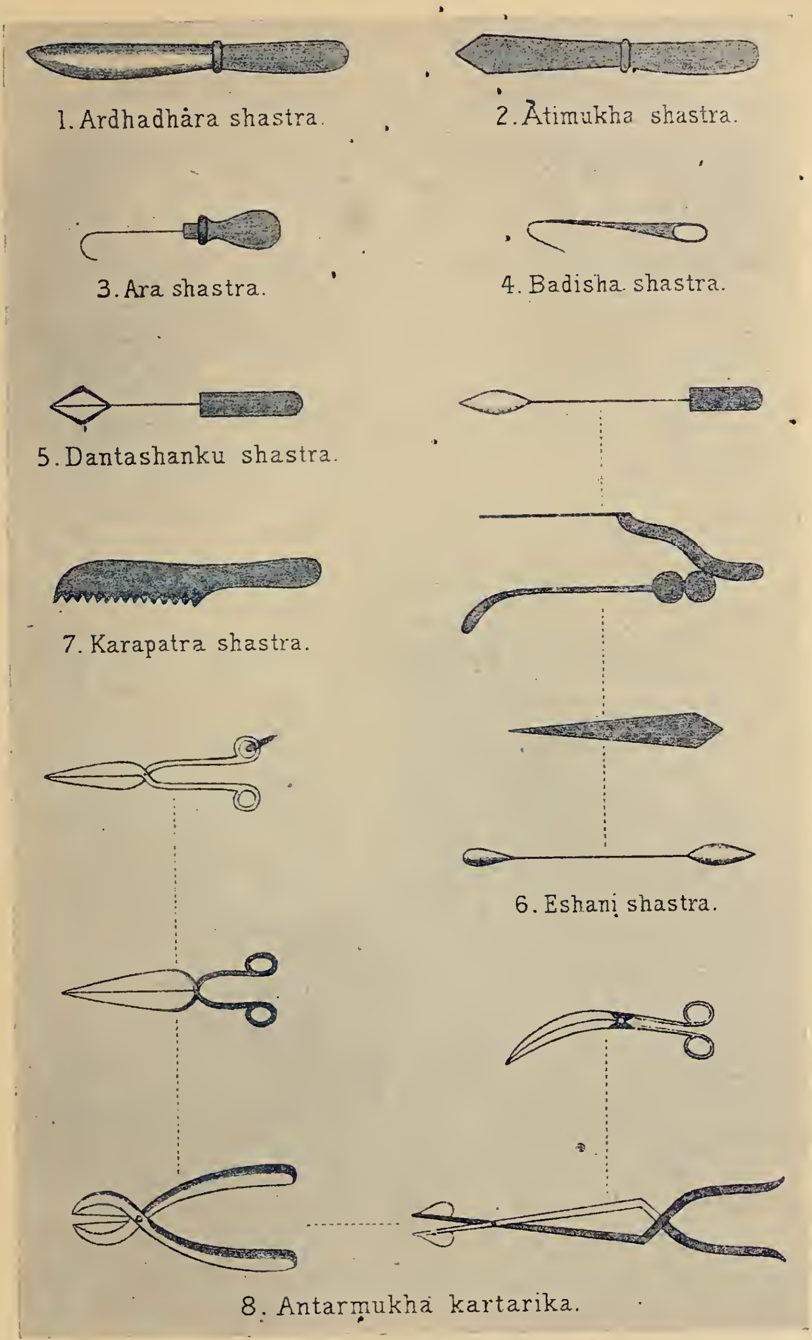

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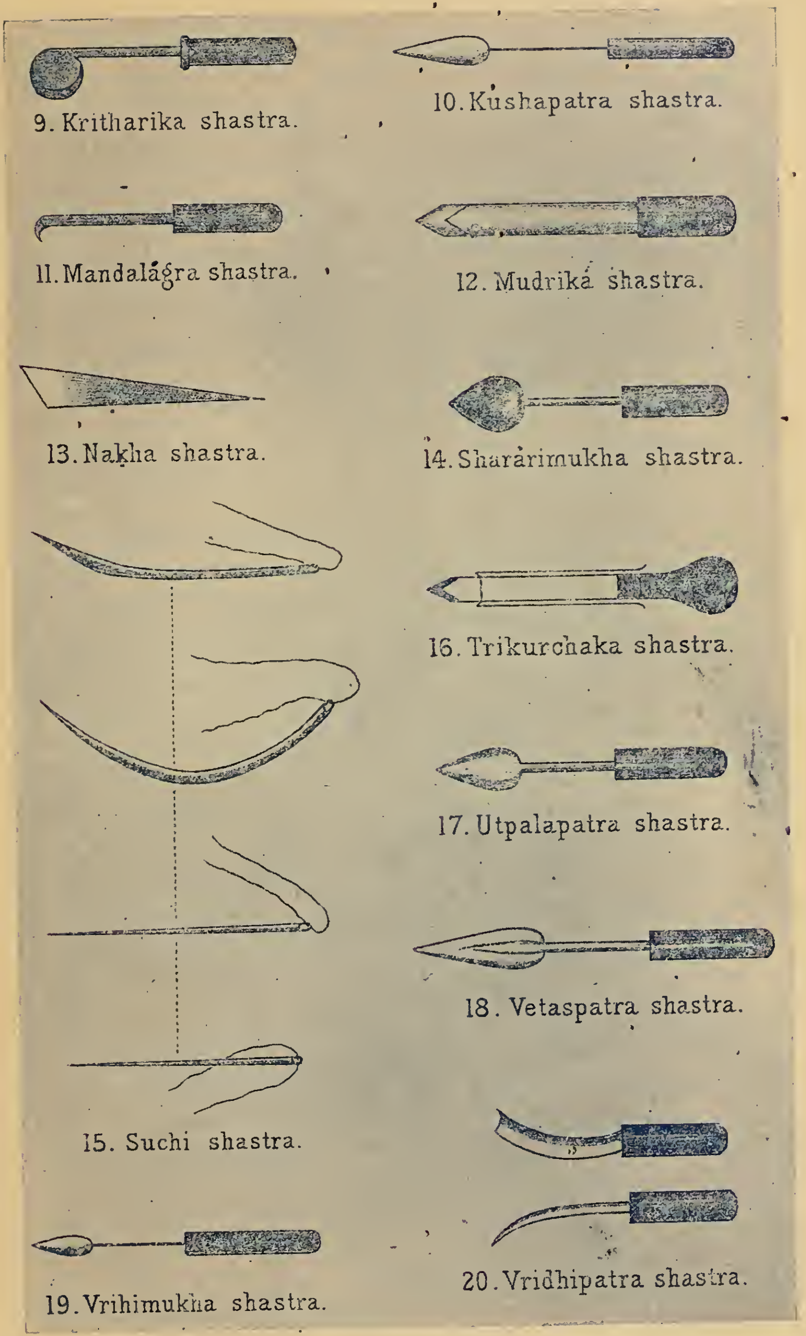

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THE SUSHRUTA SAMHITA

SUTRASTHĀNAM.

CHAPTER I.

Well, we* shall now describe the origin of the Science of Medicine, as disclosed by the holy Dhanvantari to his disciple Sushruta. **(Vedotpattimadhyayam).**

Once upon a time, when the holy Dhanvantari, the greatest of the mighty celestials, incarnated in the form of Divodása, the king of Kási, was blissfully seated, in his hermitage, surrounded by a concourse of holy Rishis; Aupadhenava, Vaitarana, Aurabhra, Paushkalávata, Karavirya, Gopura-rakshita, Sushruta and others addressed him as follows :—"O Sire, it grieves us much to find men, though otherwise well befriended

* The present work which originally formed the subject of a discourse by the holy sage Dhanvantari to his disciple Sushruta, has been compiled in its present form by the venerable Nágárjuṇa, and is accordingly designated as the Sushruta Samhitá.

by their kin and relations, falling a prey to diseases, mental, physical, traumatic, or natural, and piteously wailing in agony like utterly friendless creatures on earth ; and we supplicate thee, O Lord, to illumine our minds with the truths of the Eternal Áyurveda (Medical Science) so that we may faithfully discharge the duties allotted to us in life, and alleviate the sufferings of humanity at large. Bliss in this life and hereafter, is in the gift of this eternal Áyurveda, and for this, O Lord, we have made bold to approach thee as thy humble disciples." To them, thus replied the holy Dhanvantari :—"Welcome to all of you to this blissful hermitage. All of you are worthy of the honour of true pupilship or tutelage."

The Áyurveda (which forms the subject of our present discourse), originally formed one of the sub-sections of the Atharva Veda ; and even before the creation of mankind, the self-begotten Brahmá strung it together into a hundred thousand couplets (Shlokas), divided into a thousand chapters. But then he thought of the small duration of human life on earth, and the failing character of human memory, and found it prudent to divide the whole of the Áyurveda into eight different branches such as, the Salya-Tantram, the Sálákya-Tantram, the Káya-Chikitsá, the Bhuta-Vidyá, the Kaumár-Bhritya, the Agada-Tantram, the Rasáyana-Tantram and the Vájeekarana-Tantram.

Now about the characteristic features of each of these branches of the Science of the Áyurveda :—

The Salya-Tantram*—The scope of this branch of Medical Science is to remove (from an ulcer) any extraneous substance such as, fragments of hay, particles of stone, dust, iron or bone ; splinters, nails, hair, clotted blood, or condensed pus (as the case may be), or to draw out of the uterus a dead fœtus, or to bring about safe parturitions in cases of false presentation, and to deal with the principle and mode of using and handling surgical instruments in general, and with the application of fire (cautery) and alkaline (caustic) substances, together with the diagnosis and treatment of ulcers.

The Sha'la'kya-Tantram†—embraces as its object the treatment of those diseases which are restricted to the upward (lit :—region above the clavicles) fissures or cavities of the body, such as the ears, the eyes, the cavity of the mouth, the nostrils, etc.

The Ka'ya-Chikitsa' (General diseases)‡—treats of diseases, which, instead of being simply

* Any foreign matter, lodged in a human organism and proving painful to it, is called a Shalya.

† The name is derived from the Sanskrit term Shaláká, a probe or a rod, the use and application of the instrument being primarily included within the scope of this branch of the A'yurveda.

‡ The term Káya literally signifies the vital heat or fire which runs through the entire system, and hence the Káya-chikitsá deals with diseases which may gradually invade the root-principles of a living human organism.

restricted to any specific organ, or to any particular part of the body, affect the entire system, as Fever, Dysentery, Hæmoptysis, Insanity, Hysteria, Leprosy, unnatural discharges from the urethra, etc.

The Bhuta-Vidya (Demoniacal diseases)—lays down incantations and modes of exorcising evil spirits and making offerings to the gods, demons, Gandharvas, Yakshas, Rakshas, etc. for cures of diseases originating from their malignant influences.

The Kaumara-Bhritya (Management of children)—deals with the nursing and healthy bringing up of infants, with purification and bettering of mothers' milk, found deficient in any of its characteristic traits, and also with cures for diseases peculiar to infant life and due to the use of vitiated mother's milk or to the influences of malignant stars and spirits.

The Agada-Tantram (Toxicology)—deals with bites from snakes, spiders and venomous worms, and their characteristic symptoms and antidotes. It has also for its object the elimination of poison whether animal, vegetable, or chemical (resulting from incompatible combinations) from the system of a man, overwhelmed with its effects.

The Rasayana-Tantram (Science of Rejuvenation)—has for its specific object the

prolongation of human life, and the invigoration of memory and the vital organs of man. It deals with recipes which enable a man to retain his manhood or youthful vigour up to a good old age, and which generally serve to make the human system invulnerable to disease and decay.

The Va'jeekarana-Tantram (Science of Aphrodisiacs)—treats of measures by which the semen of a man naturally scanty or deficient in quality becomes shorn of its defects; or is purified, if deranged by the vitiated humours of the body (such as wind, etc. ; or is invigorated and increased in quantity (if pure and healthy); or acquires its healthy and normal consistence (if thinned and enfeebled by indiscretions of youth). [In short, it deals with things which increase the pleasures of youth and make a man doubly endearing to a woman].

Thus the entire science of the Áyurveda is classified into the eight preceding branches. Now tell me, which of them is to be taught and to which of you ? Said the disciples :—"Instruct us all, O Lord, in the science of surgery (Shalya) and let that be the chief subject of our study." To which replied the holy Dhanvantari :—"Be it so." Then the disciples again said :—"We are all of one mind in the matter, O Lord, that Sushruta shall be our spokesman and ask

you questions conformably to the general trend of our purpose. All of us will attentively hear what you will be pleased to discourse to Sushruta, [and that will save you the trouble of teaching us individually]". To which replied the venerable sage—"Be it so. Now listen, Sushruta, my dear child. The object or utility of the science which forms the subject of our present discussion, may be grouped under two distinct sub-heads such as (1) the cure of diseased persons, and (2) the preservation of health in those who are not afflicted with any sort of bodily distempers."

The etymological meaning of the term "Áyurveda" may be interpreted to denote either a science in the knowledge of which life exists, or which helps a man to enjoy a longer duration of life.

The primary position of surgery :— [As regards time and importance among the other allied branches of the Science of Medicine]. Hear me discourse on the Science of Surgery (Shalya-Tantram) which is the oldest of all the other branches of the Science of Medicine (Áyurveda) and is further corroborated by the four classes of testimonies, *viz.*, Perception, Inference, Analogy and Scriptural Truths (Ágamas). The primary position of this branch of the Áyurveda, (as regards its time or origin), may be inferred from the fact that Surgery lends her aid materially towards the

healing up of traumatic ulcers.* The second reason for such an inference may be deduced from the replacement of the severed head of Yajna. It is told that the god Rudra, severed the head of the God of Sacrifice (Yajna). Whereupon the gods approached the celestial Ashvins, and addressed them as follows :—"You twins, O lords, who are to be the greatest of us all, connect the head of Yajna with his decapitated trunk." To them, replied the divine Ashvins :—"We shall do, O lords, as you command us to do." Then the celestials propitiated the god Indra in order that a portion of the oblations offered in the course of a sacrifice, might be allotted to those heavenly twins. The Ashvins reunited the severed head of Yajna to his body as prayed for. [Hence this branch of the Áyurveda (Shalyanga) is the oldest of all its subdivisions].

The primary importance of the Shalyam :—All hold this Tantram to be the most important of all the other branches of the

...o seek it c... may be suc...
receptacle of health ...s instantaneous actions can be
... of such appliances as,

...ives a brie... ...egetable world belongs t...
verse :—I... of locomotion, belong to

...may be argued here, since ...nd sword-cuts had to be dressed and
...ifest in the ... to fundamental material ... the gods and the demons, long before
...ff death, ...appearance o...)], it is not ... idiopathic maladies such as, fever, etc.;
...nd Surgery contr... twofold attrib... was demanded of her towards the healing
...erly ... up of those ulcers. ... But ... branch of the Áyurveda is the oldest of all
...in... the allied branches of those ...ing art.

surgical operations, external applications of alkalis, cauterisation, etc., and secondly inasmuch as it contains all that can be found in the other branches of the science of medicine as well, with the superior advantage of producing instantaneous effects by means of surgical instruments and appliances. Hence it is the highest in value of all the medical Tantras. It is eternal and a source of infinite piety, imparts fame and opens the gates of Heaven to its votaries, prolongs the duration of human existence on earth, and helps men in successfully fulfilling their missions, and earning a decent competence, in life.

Gradual extension of the Áyurvedic Knowledge:—Bramhá was the first to inculcate the principles of the holy Áyurveda. Prajápati learned the science from him. The Ashvins learned it from Prajápati and imparted the knowledge to Indra, who has favoured me (Dhanvantari) with an entire knowledge thereof. I, for the good of mankind, am ready to impart it to those w Tantram) on earth.

anches of the Sc

The King of Kas urther corroborate **f account of himself i** ., Perception, Infe m the supreme and original god ruths (Ágama form of Dhanvantari. It is I who warde ach of th disease and decay from the celestials. Fo y be in was an inmate of the region of heaven, now I a iat ncarnated on earth

with the view to teach the Science of Surgery with all its allied branches of study to men.

In the present science (Áyurveda), the **Purusha** (self-conscious organic individual) is described as the resultant of the combination of the soul and the five primary material principles. All medical acts such as, surgical operations, administration of medicinal remedies and applications of alkaline substances, or cauterisation, etc., are restricted to the **Purusha** alone.*

Why is it so ? The answer is, simply because the created world is composed of two distinct classes, such as the mobile and the immobile.† These two classes, in their turn, are further sub-divided for the purposes of the science of medicine into the two orders, Ágneya (hot) and Saumya (cool). Hence the world is composed of five material principles, though characterised by the twofold virtues, Ágneya (hot) and Saumya (cool).‡

* It may be questioned why they should be confined to the Purusha ? Such a query may be successfully met by the statement that the Purusha alone is the receptacle of health and disease in contradistinction to the Self or Ego.

† The vegetable world belongs to the latter category, while animals, possessed of locomotion, belong to the former.

‡ It may be argued here, since everything in the universe is composed of the five fundamental material principles [of earth, water, fire (heat), air and sky (ether)], it is not competent to assert that the universe is possessed of the twofold attributes A'gneya (heated or fiery) and Saumya (cool or watery), alone. But since fire (heat) or water (cold) predominates in all things in the universe in juxtaposition with the primary virtues of the

Further classification of the mobile and the immobile :—The animated world may be divided into four subdivisions, such as the Svedaja (born of sweat or heat and moisture *i. e. abiogenous*), the Andaja (egg-born or oviparous), the Udbhijja (vegetable) and the Jaráyuja (placental or viviparous). The Purusha or the subjective personality (man) is the greatest of them all, because all other forms of life are made to minister to his wants on Earth.

Disease : Its Definition :—The Purusha (man) is the receptacle of any particular disease, and that which proves a source of torment or pain to him, is denominated as a disease.* There are four different types of disease such as, Traumatic or of extraneous origin (Ágantuka), Bodily (Shárira), Mental (Mánasa) and Natural (Svábhávika). A disease due to an extraneous blow or hurt is called Ágantuka. Diseases due to irregularities in food or drink, or incidental to a deranged state of the blood, or of the bodily humours acting either singly or in concert, are called Shárira. Excessive anger, grief, fear, joy, despondency, envy, misery, pride, greed, lust, desire, malice, etc. are

other fundamental material principles, it is not improper to classify all under the head of hot or cold, a third factor being non-existent. Hence the world (जगत्) is possessed of the twofold virtues, hot and cold.

* A disease may be defined as something which afflicts the Purusha (self-conscious personality), or those things or incidents which combine to afflict the Purusha are usually interpreted to connote that meaning.

included within the category of mental (Mánasa) distempers; whereas hunger, thirst, decrepitude, imbecility, death, sleep, etc. are called the natural (Svábhávika) derangements of the body. The Mind and the Body are the seats of the abovesaid distempers according as they are restricted to either of them, or affect both of them in unison. *

Samshodhanam (Cleansing), and **Samshamanam** (Pacification of the deranged or agitated bodily humours giving rise to the disease), and the regimen of diet and conduct are the four factors which should be duly employed in order to successfully cope with a disease.†

Food is the principal factor which materially contributes to the strength, complexion and vitality (Ojah) of animated beings. Food consists of six different tastes

* The Self or the Jeevátmá of a person is above all human concerns and, as such, can never be affected by any disease.

† Cleansing (Samshodhanam) is of two kinds, *viz.* External and Internal. External purification consists in employing such measures as surgical operations, cauterisation of the affected part or organ, external use of alkaline preparations and medicated plasters, the internal one including such measures as exhibition of purgatives and emetics, application of intestinal enemas (A'sthápanam) and blood-letting. Diet comprises four different factors such as, food, drink, lambative, etc., which, for the purposes of the A'yurveda, are again grouped under three different heads, such as the pacifier of the deranged bodily humours (Dosha-prashamanam), therapeutical (Vyádhi-prashamanam) and health-giving (Svastha-Vrittikara). A'chára (conduct) appertains to three different factors, such as the body, the speech, and the mental acts. The abovesaid measures, duly employed, are potent enough to combat all sorts of bodily distempers, if the special exigencies of each case are carefully taken into consideration.

(Rasa) [which cannot exist independently of the substances] in which they are inherent. These substances which are called the Oshadhis may be divided into two classes such as the mobile and the immobile. The immobile Oshadhis in their turn, admit of being grouped under four sub-heads such as, the Vanaspatis, the Vrikshas, the Virudhas and the Oshadhis proper.

Those trees which bear fruit without blossoming are called the Vanaspatis such as, the Plaksha and the Oudumvura). Those that bear both fruits and flowers are called the Vrikshas. Shrubs and creepers that trail on the ground are called Virudhas, whereas those plants which die with the ripening of their fruits, are called Oshadhis proper (such as cereals).

The mobile Oshadhis or animals are divided into four classes such as the viviparous, the oviparous, the sweat-begotten, and those that are born of decomposed vegetable matter. Man and other mammals belong to the first group ; birds, snakes, and reptiles belong to the second ; ants, worms, etc. belong to the third ; while frogs and Indragopas belong to the fourth. For medicinal purposes, bark, leaves, flowers, fruits, roots, bulbs, the expressed juice, and milky or resinous secretions of plants, etc.* are obtained from the vegetable world. The

* The use of oil expressed out of drugs and seeds, as well as of their ashes or alkaline preparations are likewise indicated.

skin, nails, wool, blood, flesh, fat, marrow, bones, are procured from the animal world.

Metals and minerals such as gold, silver, gems, and Manahshila (Realgar), as well as pearls, clay and Kapálas (bones), etc. should be included in the list of the earthy substances. *

Gale, windfall, sunshine, shade, moonshine, darkness, heat, cold, rain, day, night, fortnight, month, seasons, and solstices, etc. should be deemed as the works of eternal time, which, by virtue of their natural effects, contribute to the accumulation, augmentation, pacification or diminution of the deranged bodily humours (such as, wind, etc.).

Authoritative verses on the subject:—Physicians should look upon these four factors of (food, conduct, earth and time), as the accumulators, aggravators and pacifiers of the deranged bodily humours and of the diseases resulting therefrom in man. Diseases due to causes which are extraneous to the body may affect the mind or the body. When it would affect the body in the shape of any traumatic disease (such as an inflammation due to a blow or a sword cut), it should be treated medicinally like the rest of the physical maladies, while the remedy should consist in the enjoyment of

* Oxide of Iron, sand, yellow sulphurate of arsenic (Orpiment), salt, Gairika (ferruginous earth), Rasánjána (antimony) should be regarded as appertaining to the class of earthy substances.

pleasurable sounds, touch, sights, taste or smell where the mind would be found to be the seat of the distemper.

Thus I have briefly dealt with the Purusha, Disease, Medicine, Appliances and the Specific Time. The term Purusha should be interpreted to include within its meaning the combination of its five material components, and all things resulting therefrom, such as the limbs and members of the body, as well as the skin, the flesh, the blood, the veins and the nerves, etc. The term Disease signifies all distempers incidental to the several or combined actions of the three deranged bodily humours and blood. The term Medicine signifies drugs and their virtues, tastes, potency, inherent efficacy (Prabháva) and reactionary properties (Vipáka). Appliances (kriyá) denotes such processes as, surgical operations, injections, emulsive measures, lubrications, etc. The term Time signifies all opportune moments for medical appliances.

Authoritative verses on the subject :—The primary principle of the Science of medicine has thus been briefly stated and will be fully dealt with in the following one hundred and twenty chapters distributed among the five main sub-divisions or Sthánas of the present work. These hundred and twenty chapters will be found to be elaborately discussed according to the specific import or significance of their denominations under the sub-heads of Sutra-Sthánam

(Definitive Aphorisms or Fundamental principles), Nidánam (Etiology), Shárira-Sthánam (Anatomy and Physiology), Chikitsá-Sthánam (Therapeutics) and Kalpa-Sthánam (Toxicology). Subjects other than the preceding ones will be discussed in the closing chapters of the book by way of an Appendix (Uttara-Tantram).

Authoritative verse on the subject :—The man who reads this Eternal Science of Medicine (Áyurveda-Shástram) discoursed by the self-origined Brahmá and propagated by the King of Kási, becomes noted for his piety, is honoured by the kings on earth, and attains to the region of Indra (the lord of the celestials) after death.

Thus ends the first chapter of the Sutra-Sthánam in the Sushruta Samhitá which deals with the origin of the A'yurveda.

CHAPTER II.

Now we shall discuss the Chapter which deals with the rites of formal initiation of a pupil into the science of Medicine **(Shishyopanayaniya-madhyayam).**

Such an initiation should be imparted to a student, belonging to one of the three twice-born castes such as, the Bráhmana, the Kshatriya, and the Vaishya, and who should be of tender years, born of a good family, possessed of, a desire to learn, strength, energy of action, contentment, character, self-control, a good retentive memory, intellect, courage, purity of mind and body, and a simple and clear comprehension, command a clear insight into the things studied, and should be found to have been further graced with the necessary qualifications of thin lips, thin teeth and thin tongue, and possessed of a straight nose, large, honest, intelligent eyes, with a benign contour of the mouth, and a contented frame of mind, being pleasant in his speech and dealings, and usually painstaking in his efforts. A man possessed of contrary attributes should not be admitted into the sacred precincts of) medicine.

Mode of Initiation :—A Bráhmana preceptor should initiate a disciple or student in the following way —A square sand cushion or platform, measuring a cubit

in length and breadth, should be laid out on a plot of smooth, level and sacred ground under the benign influence of any auspicious phase of the moon or astral combination such as, the "Karanam," etc. and in a direction of the compass which is held most auspicious to that end. The cushion or the platform should be plastered over with a solution of water and cow-dung; and blades of Kuṣha grass should be strewn over it. Then the gods, the Bráhmanas and the physicians should be worshipped with oblations of flowers, fried paddy, gems and sun-dried rice. Then having drawn straight lines across the Sthandilam so as to meet the top of the furthest side of the square, and having sprinkled them over with holy water, the preceptor should lay down a blade of Kusha grass tied up in the form of a knot, known as the Bráhmana, along the side of the sacred cushion to his right, and kindle the sacred fire close to his seat. Then having soaked the twigs of the four sacrificial trees of Khadira, Palásha, Devadáru and Vilva, or of Vata, Oudumvara, Ashvattha and Madhuka in curd, honey and clarified butter, he should perform the rite of Homa according to the rules of a Dárvi Homa ceremony. Then libations of clarified butter should be cast into the sacrificial fire with a repetition of the Mahá Vyáhriti Mantras preceded by the mystic Omkára. After that, libations of clarified butter should be cast into the fire in honour of each of the gods and Rishis (celestial physicians) invoked

by repeating the Sváhá Mantra, and the disciple should be made to do the same. *

A Bráhmana preceptor is competent to initiate a student belonging to any of the three twice-born castes. A Kshatriya preceptor can initiate a student of the Kshatriya or the Vaishya caste, while a Vaishya preceptor can initiate a student of his own caste alone. A Shudra student of good character and parentage may be initiated into the mysteries of the Áyurveda by omitting the Mantras enjoined to be recited on such an occasion.

Then having thrice circumambulated the sacrificial fire, and having invoked the firegod to bear testimony to the fact, the preceptor should address the initiated disciple as follows :—"Thou shalt renounce lust, anger, greed, ignorance, vanity, egotistic feelings, envy, harshness, niggardliness, falsehood, idleness, nay all acts that soil the good name of a man. In proper season thou shalt pair thy nails and clip thy hair and put on the sacred cloth, dyed brownish yellow, live the life of a truthful, self-controlled anchorite and be obedient and respectful towards thy preceptor. In sleep, in rest, or while moving about—while at meals or in study, and in all acts

* The libations should be offered as follows—Sváhá (obeisance) to Brahmá, Sváhá to Prajápati (the lord of the created beings), Sváhá to Ashvins, Sváhá to Indra, Sváhá to Dhanvantari, Sváhá to Bharadvája, and Sváhá to A'treya.

thou shalt be guided by my directions. Thou shalt do what is pleasant and beneficial to me, otherwise thou shalt incur sin and all thy study and knowledge shall fail to bear their wished for fruit, and thou shalt gain no fame. If I, on the other hand, treat thee unjustly even with thy perfect obedience and in full conformity to the terms agreed upon, may I incur equal sin with thee, and may all my knowledge prove futile, and never have any scope of work or display. Thou shalt help with thy professional skill and knowledge, the Bráhmanas, thy elders, preceptors and friends, the indigent, the honest, the anchorites, the helpless and those who shall come to thee (from a distance), or those who shall live close by, as well as thy relations and kinsmen [to the best of thy knowledge and ability], and thou shalt give them medicine [without charging for it any remuneration whatever], and God will bless thee for that. Thou shalt not treat medicinally a professional hunter, a fowler, a habitual sinner, or him who has been degraded in life ; and even by so doing thou shalt acquire friends, fame, piety, wealth and all wished for objects in life and thy knowledge shall gain publicity."

Prohibited periods of the study of the A'yurveda :—The day of the new moon, the eighth day of the moon's wane, the fourteenth day of the dark fortnight, as well as the corresponding days in

the bright one, the day of the full moon, and the meetings of day and night such as (morning and evening) are occasions when the study of the Áyurveda is prohibited. Similarly, a clap of thunder heard at an improper season (months of Pousha, Phálguna and Chaitra), or a flash of lightning occurring at a time when such phenomena are naturally rare, or an evil befalling one's country, relations, or king, should be deemed as occasions prohibiting the study of the Áyurveda. Moreover, one should not read it in a cremation ground, nor while riding (an elephant, horse, or any) conveyance, nor in a battle-field, nor in a place of execution. A festival or the appearance of inauspicious omens, and the days of the fortnight usually avoided by the Bráhmanas in studying the Vedas, as well as an unclean state of the body, should be regarded as occasions prohibiting the study of the Áyurveda.

Thus ends the second chapter of the Sutrasthánam in the Sushruta Samhitá which treats of the formal initiation of a student into the Áyurveda.

CHAPTER III.

Now we shall discuss the chapter which deals with the classification of the Áyurveda and the order [in which the venerable Dhanvantari discoursed on them to his pupils]. **Adhyayana-Sampradaniyam.**

It has been stated before, that a hundred and twenty chapters have been distributed among the five parts or subdivisions (of the present work) in the following order :—Forty six in the part of Definitive Aphorisms (**Sutra-Sthánam**) ; sixteen in the part dealing with the Etiology of diseases (**Nidánam**) ; ten in the part explaining the Anatomy and physiology of the human body (**Shárira Sthánam**); forty in the part of Therapeutics (**Chikitsitam**) ; and eight in the part dealing with poisons and their antidotes (**Kalpa-Sthánam**). In addition to these the **Uttara-Tantram** consists of sixty-six chapters.

Metrical texts :—The **Sutra-Sthánam** which contains forty-six chapters, is so called because it discusses in the form of hints, arranges in the form of aphorisms and connects by links topics relating to longevity. Chapter 1 Describes the origin of the science of the Áyurveda. 2 Relates to the formal initiation of a pupil into the science of medicine.' 3 Deals with the

classification and order of the study of the Áyurveda. 4 Dwells on general interpretations and explanations of subjects studied. 5 Treats of preliminary preparations for surgical operations. 6 Deals with seasons and their influence on health and drugs. 7 Treats of surgical appliances. 8 Describes surgical instruments. 9 Gives practical instructions for surgical operations. 10 Dwells on the duties of medical men preliminary to their commencing practice. 11 Pharmacy of alkalies (potential cauteries). 12 Cauteries and the rules to be observed in their use. 13 Leeches (how and which to use). 14 Blood. 15 Dwells on the study of development and non-development of the humorous constituents of the body and excrements. 16 The ceremony of piercing the lobules of the ears. 17 How to distinguish between suppurating and non-suppurating swellings. 18 Dressings and bandages of ulcers. 19 The management of patients with ulcers, etc. 20 The salutary and non-salutary effects of regimen, etc. 21 The decisive modes in the treatment of sores, etc. 22 The opening of abscesses, etc. 23 General rules to be observed in the treatment of curable and incurable (surgical diseases). 24 The nature of diseases in general. 25 The (eight different) ways of using surgical instruments. 26 The exploration of splinters lost (deep seated) in the body. 27 The extraction of splinters. 28 How to know favourable and unfavourable terminations

in surgical diseases. 29 The favourable or unfavourable prognosis in diseases as known from messengers, omens and dreams. 30 Prognosis from the perversion of sense perception. 31 Prognosis based on the altered condition of features, etc. 32 Prognosis based on the perversion in the external appearances of the body. 33 Palliative treatment of incurable diseases. 34 The precautions to be taken (against dangers, such as poisoning of water, etc.). by a medical man for the safety of a king whose army is on the march. 35 Clinical observations made by physicians. 36 Miscellaneous subjects connected with the treatment of injuries and surgical diseases. 37 The examination of the soil for the selection of vegetable products growing on it to be used as medicines. 38 Classification of drugs according to their therapeutical uses. 39 The two classes of drugs which cleanse the system [by evacuating bad humours] and drugs which pacify the irritated humours. 40 Drugs, their flavours, properties and maturity. 41 The properties of drugs specially considered. 42 Flavours. 43 The choice of emetics. 44 The choice of purgatives. 45 Liquids. 46 Food and drink.

From their investigating the (pathological) causes and symptoms of diseases, they are called **Nidanam**, (etiology) and are sixteen in number.

Chapter 1 Causes and symptoms of diseases caused by wind. 2 Hœmorrhoids. 3 Urinary calculi 4 Fistulæ. 5 Skin diseases (Kushtha). 6 Urethral discharges. 7 Abdominal tumours and dropsy. 8 Abortion and unnatural labours. 9 Abscesses. 10 Erysipelas and Carbuncles. 11 Tumours 12 Scrotal tumours. 13 Fractures (and dislocations) 14 Diseases of the male organ of generation caused by Shuka. 15 Minor and miscellaneous diseases. 16 Diseases of the mouth.

The great sage has devoted ten chapters to the subject of Anatomy and Physiology **(Shárira-Sthánam)** for medical men and contemplative saints to learn the component parts of the human body. They are :—

Chapter 1 Cosmology. 2 Healthy and unhealthy) condition of male and female germs. 3 Development of the fœtus. 4 Analytical description of the fœtus. 5 Component parts of the body. 6 Investigation of each vital part. 7 Description of the veins. 8 Venesection. 9 Arteries. 10 Pregnancy (child-birth and management of women in child-birth and of children).

The division of Therapeutics, **(Chikitsitam)** includes (amongst others) the modes of treating diseases by medicines, expiatory ceremonies, propitiatory rites, and tranquillizing efforts. 'Forty chapters have been devoted to this division. Chapter 1 Treatment of two varieties

of ulcers. 2 Treatment of instant wounds and ulcers resulting therefrom. 3 Fractures and dislocations. 4 Diseases of wind. 5 Grievous maladies caused by wind. 6 Hæmorrhoids. 7 Urinary calculi. 8 Fistulæ. 9 Skin diseases. 10 Grievous skin diseases. 11 Urethral discharges. 12 Warts, pustules and sores caused by urethral discharges. 13 Diabetes. 14 Abdominal Dropsy. 15 Abortions and unnatural labours. 16 Abscesses. 17 Erysipelas and Carbuncles. 18 Tumours. 19 Scrotal tumours and Syphilis. 20 Minor diseases. 21 Diseases of the male genital organ caused by Shuka. 22 Diseases of the mouth. 23 Swellings. 24 Prophylactic treatment against diseases in general. 25 Miscellaneous diseases. 26 Tonics for virile debility. 27 Tonics for general debility. 28 Remedies for increasing mental powers and duration of life. 29 Remedies for innate maladies. 30 Means for removing wordly distresses. 31 Treatment of diseases where oleaginous substances are useful. 32 Treatment by diaphoretics. 33 Emetics and Purgatives. 34 Treatment for mishaps from the injudicious use of emetics and purgatives. 35 Nozzles and pipes, and enema apparatus. 36 Mishaps from injudicious use of enemas. 37 Enemas and injections. 38 Clysters. 39 Treatment of complications in general. 40 Inhalation, fumigations, gargarismata, etc.

From their proposing remedies against poisons, they are called **Kalpas**, and are eight in number.

Chapter 1 Preservation of food. 2 Vegetable and inorganic poisons. 3 Poisons from organic creation. 4 Snake poison. 5 Treatment of snake-bites. 6 Rat-bite and its treatment. 7 Emitting the sound of kettle-drums (for the elimination of poison). 8 Antidotes for and treatment of venomous insect-stings.

Thus a synopsis of one hundred and twenty chapters has been given. Now here follows the supplementary division called after its own name (**Uttara-Tantram**).

The Chapter on Sympathetic diseases is placed first, as this division has for its main object the description of such diseases and their treatment. 2 Diseases of the joinings (margin of the eyelids) of the eyeball. 3 Diseases of the eyelids. 4 The Sclerotic of the eye. 5 The Cornea. 6. The eyeball, as a whole. 7 Diseases of the pupil. 8 Treatment of eye diseases. 9 Prophylactic and curative treatment of wind affections of the eye and ophthalmia. 10 Treatment of Bile affections of the eye and ophthalmia. 11 Treatment of Phlegm affections of the eye and ophthalmia. 12 Treatment of Blood affections of the eye. 13 Treatment of affections in which scarification is needed. 14 Treatment in which paracentesis is needed. 15 Treatment by incisions. 16 Entropium and ectropium. 17 Treatment of the diseases of the pupil and vision. 18 General rules regarding ophthalmic medicine and surgery. 19 Treatment of traumatic affections of the eyeballs. 20 General

signs and symptoms of ear diseases. 21 Treatment of ear diseases. 22 Signs and symptoms of nose affections. 23 Treatment of nose affections. 24 Treatment of nasal catarrh. 25 Signs and symptoms of cranial diseases. 26 Treatment of cranial affections. These (twenty-six chapters) form the end of the eight divisions of the Áyurveda, called **Shálákyam**.

Chapter 27 Signs of diseases caused by the Navagrahas. 28 Prophylactic treatment of diseases caused by Skandha. 29 Treatment of convulsions caused by Skandha. 30 Treatment of Sakuni affections. 31 Treatment of Revati affections. 32 Treatment of Putaná. 33 Treatment of Andha Putaná. 34 Treatment of Sheeta-Putaná. 35 Treatment of Mukhamandiká. 36 Treatment of Naigamesha. 37 Origin of the nine Grahas. 38 Diseases of the Vagina (and internal female genital organs). These twelve chapters together with what is included in (the last chapter of the division on anatomy, form the fifth division of the Áyurveda) called **Kaumára-Tantram**.

Chapter 39 Fevers and their treatment. 40 Enteric Catarrh and its treatment. 41 Consumption and its treatment. 42 Diseases of the abdominal glands and their treatment. 43 Diseases of the heart (Angina Pectoris etc. 44 Anæmia and allied diseases and their treatment. 45 Hæmorrhagic affections and their treatment. 46 Apoplectic diseases and their treatment.

47 Diseases from excessive drinking and their treatment. 48 Symptoms, causes, and treatment of excessive thirst. 49 Causes, symptoms and treatment of vomiting. 50 Causes, symptoms and treatment of Hiccough. 51 Causes, symptoms, and treatment of Dyspnœa. 52 Causes, symptoms and treatment of cough. 53 Aphonia. 54 Entozoa. 55 Causes, symptoms and treatment of retention of excrements. 56 Causes, symptoms and treatment of Dyspeptic and Choleric diarrhœa. 57 Anorexia and its treatment. 58 Causes, symptoms and treatment of cystic and urethral affections. 59 Causes and treatment of urine diseases. These (twenty one chapters) describe the remaining diseases of Káyachikitsá; (which forms the third division of the Áyurveda).

Chapter 60 Causes, symptoms and treatment of diseases caused by superhuman powers. 61 Causes symptoms and treatment of Epilepsy. 62 Mania. These three chapters form the Bhuta-Vidyá (the fourth division of the Áyurveda).

Chapter 63 on the different varieties of flavour. 64 General rules for the preservation of health. 65 Deductions and inductions drawn from the texts and study of the Áyurveda. 66 On the varieties of morbid elements (humours). These four chapters are to be understood as being supplementary, and as ornaments to this division.

This last division from its superiority over the others, the great sages have called the Excellent (Uttaram). From the information it gives on varied subjects, it is called the best, the permanent and the last.

In this division which is called the last, there are included four divisions (of the Áyurveda) viz, Shálákyam, (treatment of diseases of parts situated above the clavicles), 2 Kaumárabhrityam (management of children), 3 Káyachikitsá general diseases) and 4 Bhuta-Vidyá.

The division (named) Vájeekaranam (on the strengthening of virile power, etc.) and Rasáyanam remedies preserving vigor, etc.) have been included in the (fourth) division (of this treatise called Chikitsá.

The doctrine of antidotes comes under the head of Kalpa of this treatise and Shalyam surgery is incidentally treated throughout the book. Thus these are the eight limbs divisions of the Science of Medicine proclaimed to the world by the original god. Those, who study them with due care and make use of the knowledge with caution, shall preserve the lives of men on this earth. It is imperatively necessary that the book should be read ; and after having read it one should attend to the practice (of the science . The physician who has learnt these both, is fit to be honoured by kings.

Authoritative verses on the subject :—A physician, well versed in the principles of the science of medicine (Áyurveda), but unskilful in his art through want of practice, loses his wit at the bedside of his patient, just as a coward is at his wit's end to determine what to do when for the first time he finds himself in the ranks of a contending army. On the other hand a physician, experienced in his art but deficient in the knowledge of the Áyurveda, is condemned by all good men as a quack, and deserves capital punishment at the hands of the king. Both these classes of physicians are not to be trusted, because thy are inexpert and half educated. Such men are incapable of discharging the duties of their vocation, just as a one-winged bird is incapable of taking flight in the air. Even a panacea or a medicine of ambrosial virtues administered by an unpractised or ignorant physician, will prove positively baneful as a draught of poison, or a blow with a weapon, or a thunderbolt. A physician, ignorant of the science and art of surgery and emollient measures (Sneha-karma), etc. is but a killer of men out of cupidity, and who is allowed to carry on his nefarious trade only through the inadvertence of the king. A physician well versed in the principles of surgery, and experienced in the practice of medicine, is alone capable of curing distempers, just as only a two-wheeled cart can be of service in a field of battle.

Now hear me, O child, describe the mode of studying (the present science of the Áyurveda.) The pupil having worshipped and recited his daily prayers should calmly sit near his preceptor, pure in body and mind, who should teach him a full Shloka (or couplet of the Áyurveda), or a half or a quarter part thereof, adapted to his intellectual capacity. Then he should make a full and elaborate paraphrase of the recited couplet or any part thereof, and ask his pupils individually to do the same. When the pupils have paraphrased the same to the satisfaction of the preceptor, he should again recite the same stanza or couplet. The passages or shlokas should not be recited too hastily, nor drawled out in a timid or faltering voice, nor with a nasal intonation. The voice should be neither too loud, nor too weak, but each sound should be clearly and distinctly uttered, and the lips, the eyes, the eye-brows, and the hands, etc. should not be lifted or moved to keep time with the recitation. No one should be allowed to pass between the pupil and the preceptor at the time of study.

Authoritative verses on the subject :—A pupil who is pure, obedient to his preceptor, applies himself steadily to his work, and abandons laziness and excessive sleep, will arrive at the end of the science (he has been studying).

A student or a pupil, having finished the course of

his studies, would do well to attend to the cultivation of fine speech and constant practice in the art he has learnt, and make unremitting efforts towards the attainment of perfection (in the art).

Thus ends the third Chapter of the Sutrasthánam in the Sushruta Samhitá which deals with the Classification of the A'yurveda.

CHAPTER IV.

Now we shall discuss the Chapter which deals with General Explanations **(Prabhásaniya-madhyáyam).**

The endeavours of a man who has studied the entire Áyurveda (shástra) but fails to make a clear exposition of the same, are vain like the efforts of an ass that carries a load of sandal wood (without ever being able to enjoy its pleasing scent).

Authoritative verse on the subject :—A foolish person who has gone through a large number of books without gaining any real insight into the knowledge propounded therein, is like an ass laden with logs of sandal-wood, that labours under the weight which it carries without being able to appreciate its virtue.

Hence the preceptor will clearly explain each shloka or a half or a quarter part thereof as contained in the present work, divided into a hundred and twenty chapters (as well as in the concluding portion of the Uttara-Tantram appended to it) ; and the student or the disciple shall attentively hear everything explained or discoursed on by the preceptor. Since it is extremely difficult to classify drugs, taste, virtue (Guna), potency (Virya), transformatory or reactionary effect

(Vipáka), fundamental bodily principles (Dhátu) bodily excrement (Mala), hollow viscera (Áshaya), vital parts (Marma), veins (Sirá), nerves (Snáyu), joints (Sandhi), bones (Asthi) and the fecundating principles of semen and ovum, and to extricate any foreign matter lodged in an ulcer), or to ascertain the nature and position of ulcers or fractures, or the palliative, curable or incurable nature of a disease, etc.; and since these subjects perplex even the profoundest intellects though a thousand times discussed and pondered over, not to speak of men of comparatively smaller intellectual capacity, hence it is imperatively obligatory on a pupil or a disciple to attentively hear the exposition of each shloka, or a half or a quarter part thereof, made by the preceptor (while studying the science of medicine).

For explanations of truths and principles quoted from other branches of (science or philosophy) and incidentally discussed in the present work, the student is referred to expositions made by the masters (of those sciences or philosophies), since it is impossible to deal with all branches of science, etc. in a single book (and within so short a compass).

Authoritative verses on the subject :—By the study of a single Shástra, a man can never catch the true import of this (Science of Medicine). Therefore a physician should study as many allied branches of (science or philosophy) as possible. The

physician who studies the Science of Medicine from the lips of his preceptor, and practises medicine after having acquired experience in his art by constant practice, is the true physician, while any other man dabbling in the art, should be looked upon as an impostor.

The Shalya-Tantras (surgical works) written or propagated by Aupadhenava, Aurabhra, Sushruta and Paushkalávata, are the bases of the works or Tantras written by others (Karavirya, Gopura-rakshita, etc,).

Thus ends the fourth chapter of the Sutrasthánam in the Sushruta Samhitá which deals with General Explanations.

CHAPTER V.

Now we shall discuss the Chapter which treats of Preliminary measures in connection with the curative remedies of a disease).* **(Agropaharaniyam-adhyayam).**

The entire course of medical treatment in connection with a disease may be grouped under three subheads, as the Preliminary measures (Purva-karma); the Principal therapeutical or surgical appliances (Pradhána-karma); and the After-measures (Paschát-karma). These measures will be discussed under the head of each disease as we shall have occasion to deal with them. As the present treatise principally

* Several authorities hold that acts such as fasting, administration of purgatives, etc. should be included within the preliminary measures; application of absorbent (Páchana) or healing medicinal agents, within the second or the principal measures; and the administration of tonics or restoratives within the third or the after-measure group. Others, on the contrary, lay down that measures adopted for the absorption, lubrication (pacification by the application of oily substances) or elimination of the deranged bodily humours by sweating should be grouped under the first subhead (Purva-karma), the administration of active purgatives, emetics, etc., under the second (Pradhána-karma) and the giving of rice meal, etc. to the patient under the (Paschát-karma) last; while according to others the active medicinal agents employed to cope with the deranged humours in the incubative stage of a bodily disease till the appearance of its first characteristic symptoms, should be denominated as the Preliminary measure; measures employed for the subjugation of a disease in its patent or fully developed stage as the Pradhána-karma, and measures employed to guard against the recrudescence of a disease and for the restoration of health in a patient is the sequel treatment or the Paschát-karma.

treats of surgical acts or operations, we shall discourse on them and their accessories at the outset.

Surgical acts or operations are divided into eight different kinds such as Incising (Chhedya), Excising (Bhedya), Scraping (Lèkhya), Puncturing (Vedhya), Searching or probing (Eshya), Extracting (Ahárya), Secreting fluids (Visrávya) and Suturing (Seevya). A surgeon (Vaidya) called upon to perform any (of the eight preceding kinds) of operations, must first equip himself with such accessories as surgical appliances and instruments, alkali, fire, probe or director (Shaláka), horns, leeches, gourd (Alávu), Jámvavoushtha (a kind of pencil shaped rod made of slate with its top-end cut into the shape of a Jamboline fruit), cotton, lint, thread, leaves, tow (Patta), honey, clarified butter, lard, milk, oil, Tarpanam (powdered wheat soaked in water), decoctions (Kasháya), medicated plasters, paste (Kalka), fan, cold water, hot water, and cauldrons, etc., and moreover he shall secure the services of devoted and strong-nerved attendants.

Then under the auspices of blissful astral combinations, etc., and having propitiated the Bráhmanas and the physicians, with gifts of curd, sun-dried rice, cordials and gems, etc., and having made offerings to the gods and uttered benediction, etc., the surgeon should commence his work. The patient should be given light food (before the act), and made to sit with

his face turned towards the east. His limbs should be carefully fastened (so as to guard against their least movement during the continuance of the operation). Then the surgeon, sitting with his face towards the west, and carefully avoiding the vital parts (Marmas), Veins, nerves (Snayus), joints, bones and arteries of the patient,should insert the knife into the affected part along the proper direction till the suppurated part would be reached and swiftly draw it out. In case of extended suppuration, the part opened (length of incision) should be made to measure two or three finger's widths in length. An incision (Vrana) which is wide, extended, equally and evenly divided, should be deemed the best.

Authoritative verses on the subject :—An incision which is wide, extended, well divided, does not involve any vital part, etc. of the patient, and is well-matured as regards time, is the best of its kind*. Courage, light handedness, non-shaking, non-sweating, sharp instruments, self confidence and self command are what should be possessed by a surgeon engaged in opening a boil or an abscess.

Two or three incisions should be made if a single opening does not seem large enough for the purpose.

* Certain commentators interpret the couplet as follows : A boil or an abscess which is wide, extended, well defined in its shape, equally suppurated in all its parts and does not involve any vital part of the body is the fittest thing for a surgeon's knife—Tr.

Authoritative verse on the subject :—The knife (lançet) should be freely used wherever a fissure, sinus, or a cavity would appear in a boil, so as to ensure a complete flowing out of the pus accumulated in it.

Lateral (tirjak) incisions should be made in regions of the eye-brows, temple, forehead, cheeks, eyelids, lower lip, gums, armpits, loins, belly and the groins.

An incision made in the region of the hand or root should be made to resemble the disc of the moon, while those about the anus and the penis should be made semi-circular (half-moon) in shape.

Authoritative verse on the subject :—An incision in any of the abovesaid regions not made as directed, may give rise to extreme pain, prolonged granulation (healing) and condylomatous growths in and about the ulcer, owing to an inadvertent cutting of the local veins, or nerves. In a case of artificial or instrumental parturition, in ascites, in piles, in stone in the bladder, in fistula in ano, and in diseases affecting the cavity of the mouth, the patient operated on should be kept on an empty stomach (before the act).

Then sprays of cold water should be dashed over the face and the eyes of the patient to relieve the pain and the sense of exhaustion incidental to the operation. The sides of the incision should be firmly pressed (so as to ensure a good outflow of the accumulated pus) and

the margins of the wound should be rubbed with the fingers (so that they may have a level surface and be of uniform structure throughout.) Then the wound should be washed with an astringent decoction (of Nimba, Triphalá, etc.) which should be wiped and made thoroughly dry with a piece of clean linen. Then a lint plug (Varti) plastered over with the (paste) Kalka of sesamum, honey and clarified butter, and soaked in disinfectant (lit :—purifying medicines such as Ajagandha, etc.) should be inserted deep into the cavity of the wound. After that, a poultice made of officinal substances should be applied over it and the whole should be bound up with thick layers of tow (Kavalikás—such as the leaves and bark of the Indian figtree etc.) which are neither too irritant nor too cooling in their effect ; and finally scraps of clean linen should be wound round them. The limb, [or the affected part] should be subsequently fumigated with the fumes of pain-killing (anodyne) substances and also with those of drugs which are supposed to ward off all malignant spirits (from the bedside of the patient.)*

Then it should be fumigated with the drugs, known as Guggulu, Vacha, white mustard, Saindhava and the leaves of the Nimva tree, soaked in clarified butter. The residue of the clarified butter [dripped

* Even the bedsheets, etc. of the patient should be fumigated as above. This foreshadows the germ theory of the modern days—Tr.

down and collected from the fumigating compound described above], should be rubbed over the region of the heart and other vital parts of the patient, and the floor of the chamber should be washed and sprinkled over with drops of water previously kept in a (new) pitcher for the purpose. The rites of protection from the influences of baneful spirits, should then be performed by reciting the Mantra which runs as follows :—"I am about to practise the prophylactic incantation for guarding thy person against the malignant influences of Rakshas and conjured demonesses, and may the god Brahmá be graciously pleased to approve of its performance. May the Gods and deities and ministers of grace disperse and confound the hosts of wrathful Nágas (celestial serpents), Pisháchas, Gandharvas and Pitris that might be maliciously disposed to strike thee in thy sickly confinement. May the spirits, which stir abroad in the night and roam about in the sky and on earth, defend thy person in recognition of thy fervent devotion to them. May the concourse of Brahma-begotten sages (such as, Sanaka, etc.), the saintly and canonised kings (Rájarshis) in heaven and the sacred mounts, streams and oceans of the earth protect thee from evil. May the fire-god guard thy tongue ; the wind-god protect thy breath ; and the Moon-god, Parjanya, Vidyut (lightning) and the spirit of the clouds preserve the healthy coursings of those vital winds in thy organism which are respectively known as Vyána,

Apána; Udána and Samána. May Indra, the presiding deity of all physical energies, keep thy bodily strength immaculate. May Manu defend the two side tendons at the nape of thy neck, as well as thy faculty of intellect ; the Gandharvas, thy faculty of desire ; Indra, thy fortitude ; Varuna, thy faculty of cognition ; the Ocean, thy region of umbilicus ; the Sun-god, thy eyes ; the Quarters of the Heaven, thy ears ; the Moon-god, thy mind ; the Stars, thy complexion ; the Night, thy shadow ; the Water, thy vigour ; the Oshadhis, thy hair ; Infinite Ether, the space which is imprisoned in thy body ; Vasundhará, thy body ; Vaishvánara, thy head ; Vishnu, thy moral courage ; Purushottama (the foremost of beings), thy energy of action (dynamical action of purposes); Brahmá, thy self ; and Dhruva (immutable being), thy eyebrows. May these divinities, which perpetually reside in thy body, ensure thy safe continuance in being and may thou enjoy a long life through their grace. May the gods such as, Brahmá, etc., confer blessings on thy head. May the Sun, the Moon, the twin sages Nárada and Parvata, the fire-god, the wind, and the other celestial helpmates of Indra, bring thee good. May the prophylaxis devised by Brahmá keep thee from evil. May thou be spared to witness the return of many a long and happy year on earth. May such abnormal physical phenomena as, drought, deluge, excessive downpour of rain, and excessive germination (or wholesale

extinction of such vermin as) rats, mosquitoes, flies which invariably portend evil and mortality in a community, as well as bloody feuds among kings, abate and cease. May thou be relieved of all pain and misery. We close the prayer with a "Sváhá" (obeisance). The present Vedic mantra exercises an occult power in relieving ailments which are due to the malignant influences of conjured up she-devils. May thou acquire a long life through the protective energy of the prophylactic prayer (lit :—incantation) now read by me.

Then having protected the body of the patient with the recitation of the above Vedic Mantra, the surgeon shall see his patient taken to his own chamber, and prescribe the proper course of medicine and diet according to the exigencies of each case. The old bandage should be loosened on the third day of the operation, when the wound or the ulcer should be washed, and a fresh bandage should be wound round as before. The bandage should not be loosened on the day following the lancing of a boil, as such a measure might give rise to a sort of excruciating pain and formation of knots in the wound and retard the process of granulation (healing). On the third day, the surgeon (Vaidya) should prescribe the proper medicated plaster, diet, etc. after fully considering the strength of the patient, the nature of the disease, and the then prevailing season of the year. A wound should not be tried to be healed up, as long as

the least morbid matter, or pus remains in its inside, as it would lead to the formation of fresh cavities in the surrounding healthy tissues, and ultimately to a recrudescence of the disease.

The authoritative verses on the subject :—Accordingly a wound or an ulcer should be made to heal up after the perfect purification of both of its inside and exterior has been fully brought about. Even after the healing of the wound the patient should studiously avoid all sexual connections, indigestive viands, fatiguing physical exercises and indulgence in emotions of grief or fright, or in ecstasies of joy, until the cicatrix has acquired enough toughness. The dressings and bandages should be untied and changed every third day in winter, in spring and in the season of Hemanta, and on each alternate day in summer and in the rains. But a physician (surgeon) should not be guided by these rules in cases where there would be reasons to apprehend imminent danger, and in such cases the wound or the ulcer, like a house in flames, should be checked as speedily as possible.

Clarified butter boiled with Yashtimadhu, and applied tepid to a wound, incidental to a surgical operation, is sure to alleviate the excruciating pain that is usually experienced in such an affected part.

Thus ends the fifth chapter of the Sutrasthánam in the Sushruta Samhitá which treats of Preliminary measures.

CHAPTER VI.

Now we shall discuss the Chapter which treats of the characteristic features of the different seasons of the year and their influence on health and drugs (**Ritucharyádhyáyam**).

The Eternal Time is without origin, middle, or end, self-begotten, and the lord of all attributes. Contrariety or non contrariety of the natural attributes of drugs or substances endued with characteristic tastes, such as sweet, etc., are brought about by time ; and time is the principal factor that controls the births or deaths of beings.

Etymology of the term Kála (time):—The Kála or the Eternal time is so called from the fact of its not suffering even one of its own minutest particles or subdivisions (Kalá) to perish, though perpetually moving, and in constant motion in itself ; or it derives its epithet from the fundamental quality of its destroying all beings and laying their dead remains in heaps in succession. Some assert that the name is due to the fact that time blends (kalanam) all beings with misery or happiness according to their respective acts, or to its leading all beings to destruction (kála).

The Sun-god, by his peculiar motions, divides eternal time which is measured by years (Samvatsaras)

into (increasingly progressive but smaller subdivisions) such as, Nimeshas (lit :—time taken in closing the eyelids), Káshthás, Kalás, Muhurtas, days and nights, fortnights, months, seasons, solstices, years and Yugas.

Time taken in articulating any of the short vowels (such as A. etc.), is called an Akshi-Nimesha. Fifteen Akshi-Nimeshas make one Káshthá. Thirty Káshthás make one Muhurta. Thirty Muhurtas make one day and night. Fifteen days and nights make one fortnight. A fortnight is either dark or bright. Two fortnights make one month. The twelve months such as, Mágha, etc. are divided into six seasons such as, Winter, Spring, Summer, Rains, Autumn and Hemanta, each consisting of two months.

The two months known as Tapas and Tapasya (Mágha and Phálguna) constitute the season of winter. Spring consists of two months called Madhu and Mádhava (Chaitra and Vaishákа). Summer is marked by two months known as Shuchi and Shukra (Jaistha and Áshádha). The rains or the rainy season is marked by two months called Nabhas and Nabhasya (Shrávana and Bhádra). The two months known as Isha and Urja (Áshvina and Kártika) constitute what is called the season of Autumn. Hemanta is marked by two months called Sahas and Sahasya (Agraháyana and Pousha). These six seasons are respectively characterised by cold, heat, rains, etc.

The two Ayanams are ushered in by the sun and the moon changing their respective courses in the heavens (passing over the tropics of Cancer and Capricorn) as the measurers of time. The rains, autumn and Hemanta follow one another in succession when the sun is over the Tropic of Capricorn or is in the Winter Solstice (Dakshináyanam) and the moon gains in strength in this part of the year. Rasas (Serum or sap) possessed of acid, saline and sweet tastes, grow strong and become dominant when the sun is over the Tropic of Capricorn (Dakshináyanam) and all beings gain in strength and energy more and more. Winter, spring and summer mark the passing of the sun over the Summer Solstice (Uttaráyanam). The sun grows stronger in heat and light, and saps (rasas) of bitter, pungent and sour tastes increase in intensity, and all animals gradually begin to lose strength and energy.

Authoritative verses on the subject :—The moon imparts the moisture and humidity to the earth which is soaked up by the sun in his daily course, while the wind in conjunction with the sun and the moon, contributes towards the preservation of animal life. The successive change of the two solstices marks a year.

Five such complete years count as a Yuga. The subdivisions of eternal time from the minutest Nimesha to a complete Yuga, are constantly revolving like a wheel,

and this constant or perpetual revolution is called the wheel or cycle of time (Kála-Chakra) by certain authorities.

The six seasons such as, the Rains, etc., have been again adverted to in this chapter for the purpose of fully describing the accumulation, excitation (aggravation) and pacification of the bodily humours, such as wind, etc. According to some, the rainy season consists of two months known as Bhádra and Áshvina ; Autumn consists of the two months of Kártika and Márgashirshya ; Hemanta consists of the two months of Pousha and Mágha ; spring consists of the two months of Phálguna and Chaitra ; summer, of Vaishákha and Jaistha ; and Právrit, of Áshádha and Shrávana.

Oshadhis (Medical plants and cereals) sprout during the rains and are enfeebled in their properties. Water becomes muddy or turbid and the earth is covered over with fresh deposits of washed off or silted mud. The sky becomes overcast with clouds, and the wind, charged with an excess of humidity, dulls the appetite and organisms of beings. Hence the food of beings which principally consists of tender and new-grown vegetables of feeble potency, considerably vitiated by the turbid water partaken of as drink during the season, proves acid in its digestive reaction, and germinates excessive bile in the human system. In autumn the sky becomes cloudless, the mire is dried

up, and the bile originated and accumulated during the rains, is liquefied by the rays of the sun and gives rise to bilious diseases.*

Plants and vegetables (Oshadhis) that grow or sprout during the rainy season, are matured in course of time and ripen in their virtues and potency in the season of Hemanta. The water becomes clear, cool and heavy in this season. The sun's rays become feeble and mild; and the winds moistened with frost and snow, make the human system a little numb and heavy. Hence water and vegetables partaken of in Hemanta are divested of their properties of acid reaction after being assimilated in the human system, but they give rise to an accumulation of phlegm in the body owing to their heaviness, sliminess, and cooling and oily character. In spring, the phlegm thus accumulated in the body is liquefied and ushers in diseases due to a deranged state of that bodily humour.†

The said plants and vegetables, in their turn, lose their sap, moisture and nutritive element in summer, and become dry and extremely light. In the same manner water becomes drought-making [produces a state of parchedness in the organism—Ruksha] in its virtue, and considerably loses its natural coolness and

* This should be regarded as the excited, aggravated or agitated state of bile (Pitta) in the parlance of A'yurveda.

† This is called the excited or agitated state of phlegm (Kafa).

nutritive properties. The sun's rays dry up the natural moisture of the human system, and accordingly water and vegetables largely partaken of in summer, give rise to an accumulation of wind in the system owing to their lightness, dryness, or expansive and drought-making properties. Subsequently wind thus accumulated in the summer, is agitated by the rains and cold winds in the forepart of the rainy season (Právrit) when the ground is flooded with water and thus gives rise to diseases which are incidental to a deranged state of the bodily wind.*

The fundamental bodily humours such as, wind, bile, etc. augmented and accumulated during the rains, Hemanta and summer, should be checked as soon as they become aggravated (manifest themselves) in autumn, spring, or in the forepart of the rainy season (Právrit).

Diseases which owe their origin to a deranged state of bile, phlegm and wind, are respectively ameliorated in Hemanta, summer, and autumn by natural causes, [such as the variations of atmospheric or earthly temperature, rainfall, etc.]. Thus far we have discussed the accumulation, excitation and pacification or alleviation of the deranged bodily humours.

Likewise the features, which specifically mark the different seasons of the year are observed to

* This is called the excited state of wind (Vayu).

characterise the different parts of a complete day and night, [or in other words] traits peculiar to spring time exhibit themselves in the morning ; the noon is marked by all the characteristics of summer ; the evening by those of the rainy season ; the midnight by those of autumn ; and the hours before dawn by those of Hemanta. And similarly, like the seasons of the year, the different parts of the day and night are marked by variations of heat, cold, etc. [or in other words] the deranged bodily humours such as wind, bile, etc. naturally and spontaneously accumulate, aggravate, or subside during the different parts of the day as they do in the different seasons of the year [represented by those parts of the day and night as stated above].

Water and vegetables retain their natural properties when the seasons are natural, and do not exhibit contrary features, and they then tend to increase the appetite, vitality, strength, and power of the human system. Contrary or unnatural seasons are but the consequences of sin committed by a whole community and portend the workings of a malign destiny. A season, exhibiting unnatural or contrary features, affects or reverses the natural properties of water and vegetables peculiar to it, which, drunk or partaken of, cause dreadful epidemics in the country. The best safeguard lies in not using such defiled water and vegetables when an epidemic breaks out in the country.

Sometimes a town or a city is depopulated by a curse, anger, sin, or by a monster or a demoness conjured up by a spell or incantation. Sometimes the pollens of poisonous flowers or grasses, etc., wafted by the winds, invade a town or a village, and produce a sort of epidemic cough, asthma, catarrh, or fever, irrespective of all constitutional peculiarities or deranged bodily humours agitated thereby. Towns and villages are known to have been depopulated through malignant astral influences, or through houses, wives*, beds, seats, carriages, riding animals, gems and precious stones assuming inauspicious features.

Prophylactic measures :—In such cases migration to a healthy or unaffected locality, performances of rites of pacification and atonement, (wearing of prophylactic gems and drugs), recitations of mantras, libations of clarified butter cast into the sacrificial fire, offerings to the gods, celebration of sacrificial ceremonies, obeisance with clasped palms to the gods, practice of penances, self-control and charity, kindness, spiritual initiation, obedience to one's elders and preceptors, and devotion to the gods and the Brámhanas, and observance of such like rules of conduct may prove beneficial to the affected community.

* Marriages with girls of prohibited description have been known as well to have ushered in an epidemic which devastated a whole town or a country.

The characteristic features of the seasons which do not exhibit unnatural traits (Metrical texts) :—Cold winds from the north blow in the season of Hemanta. The quarters of the sky are enveloped in smoke and assume a dusky aspect. The sun is hid in the frost, and lakes and pools are frozen or lie covered over with flakes, or thin layers of ice. Crows, rhinoceroses, buffaloes, lambs and elephants become excited and sprightly in this part of the year; and the Lodhra, Priyangu, and Punnága trees begin to blossom.

Winter exhibits the same features as above, only in a greater degree of intensity; and the quarters of the sky are agitated by strong gales of wind and showers of rain.

In spring, when the summits of the mount Malaya are besmeared red with the moist foot-prints of the brides of the Siddhas and the Vidyádharas, and are perfumed in contact with the sweet-scented sandal forests, the lively south-wind is roused up from his lair and winnows gladness to damsels burning with desires, and kindles up the flame of love and appeases the amorous anger of the beloved pairs by turning their fancies to themes of love. The quarters of the sky are cleared up and look joyful. The woods are decked with the full-blown flowers of the Kinshuka, lotus,

Vakulá, mango and Ashoka trees. The bee hums and the notes of the Cuckoo are heard to reverberate through the skies. The south wind fans this king of the seasons, and the forests are hung with the festoons of tender and sprouting leaves in his honour.

The sun's rays become stronger and more intense in summer. Unhealthy winds blow from the south-east. The earth is heated ; the rivers run narrow and shallow in their beds ; the quarters of the sky glare with a blazing light, the birds Chakravákas with their mates roam about in quest of cool ponds and reservoirs of water ; herds of deer are tormented and overwhelmed with thirst ; trees, plants and creepers are scorched by the intense heat, and withered leaves drop off from the trees which alone serve to make the identification of their parents possible.

In the forepart of the rainy season (Právrit), packs of detached clouds, spangled with lightning and driven before the gales of the west-wind, come thundering over and envelop the skies. The Earth is robed in green with luxurious growth of corn, enlivened here and there by the dark crimson of the cochineal insects (Indragopa), and Kadamva, Nipa, Kutaja, and the Ketaki trees begin to flower.

During the rainy season, the rivers overflow their banks, tumbling down the trees which grow on them. Ponds and lakes are decked with the full-blown Kumud

and Nilotpala flowers. The earth is covered with profuse vegetation. All distinction between dry lands and reservoirs of water becomes impossible, and the sun and the planets are enveloped in dark clouds that shower torrents of rain but do not roar.

In autumn the sun's rays assume a mellow golden tint. Masses of white clouds are seen to sail the dark deep blue of heaven. Ponds are decked with the full blown lotus flowers, agitated by the wings of the diving swans The high grounds become dry, while the low-lands still retain their muddy character. The level plains are covered with shrubs and undergrowths, and plants and trees such as, Vána, Saptáhva, Vandhuka, Kásha and Asana, flower in abundance.

The bodily humours such as wind, etc. are disturbed and aggravated by the contrariety, excess or variations in the characteristic features of the seasons. Hence it is prudent to check the deranged phlegm in spring, to conquer the deranged bile in autumn, and to subdue the deranged bodily wind in the rains, before they develop themselves in any patent or manifest bodily ailment.

Thus ends the sixth chapter of the Sutrasthánam in the Sushruta Samhitá which treats of the characteristic features of the seasons and their influence on health and drugs.

CHAPTER VII.

Now we shall discuss the Chapter which treats of **Surgical Appliances, their Uses and Construction. (Yantra-Vidhimadhyayam).**

Surgical instruments number one hundred and one * in all, of which the hand is the most important, inasmuch as (all of them depend on the hand for their principal auxiliary) and as none of them can be handled without it; and further because all surgical operations pre-eminently require its co-operation. Any foreign or extraneous substance, which finds a lodgment in the human system and becomes painful to the body and the mind alike, is called a Shalyam; and surgical instruments are the means of extracting it (from its seat or place where it is embedded).

(Surgical) **Appliances** may be divided into six different groups or types, such as the **Svastika**, the **Sandansha**, the **Tála**, the **Nádi Yantras**, and the **Shalákás**, besides those that are called the minor or accessory **appliances (Upa-yantras).**

The **Svastika** instruments (forceps) in their turn, are divided into twenty-four sub-classes; the **Sandansha** instruments (tongs) into two; the **Tála Yantras**

* According to certain authorities hundred is here indefinitely used for a large number.

into two ; the **Nádi Yantras** (tubular) into twenty ; and the **Shalákás** (bougies) into twenty-eight ; while the **Upa-yantras** admit of being divided into twenty-five different types. These instruments are all made of iron which may be substituted for any other similar or suitable substance where iron would be unavailable.

The mouths of these appliances are usually made to resemble those of birds and beasts, and hence they should be made to resemble the mouths of some particular animal in shape, or otherwise, according to the advice of old and experienced physicians (surgeons), or according to the directions as laid down in the Shástras (Medical books of recognised authority), or according to the exigencies of the case, or after the shape and structure of other appliances used on similar occasions.

Metrical texts:—Appliances should be made neither too large nor too small, and their mouths or edges should be made sharp and keen. They should be made with a special eye as to strength and steadiness, and they should be provided with convenient handles.

Appliances of the Svastika class should be made to measure eighteen fingers in length ; and their mouths should be made to resemble those of lions, tigers, wolves, hyenas, bears, cats, jackals, deer, Ervárukas (a species of deer), crows, cormorants,

Kururas (a species of bird), Hásas (a species of sparrow), vultures, falcons, owls, kites, herons, Bhringarájas (a species of bird), Anjalikarnas, Avabhanjanas, Nandimukhas, and such like beasts and birds. The two blades or halves of a **Svastika** should be welded together by means of a bolt resembling a Masura pulse (lentil) in size, and the handles should be turned inward in the shape of a mace, or an Ankusha. Appliances of this type should be used in extracting any thorn or foreign matter which may have entered into the bones.

Sandanshas tongs are divided into two classes as they are soldered together with or without a bolt. They should be made to measure sixteen fingers in length, and should be used to withdraw any thorn-like substance from below the skin, flesh, veins or nerves.

The **Tála Yantras** which measure twelve fingers in length, may be divided into two classes as the single Tála and the double Tála. The former resemble the scales of fish in shape, while the latter, according to certain authorities, are made to resemble the entire mouth of a fish of the Bhetuli species. These Yantras are used in extracting splinters from inside the nose, ears and other external channels or passages of the body.

The **Nádi Yantras** (tubular instruments like syringe,s

enemas, etc. with a passage or aperture running through their entire length) are constructed in a variety of shapes and for various purposes. Some of them are open at one end, while others are open at both. These instruments are used for the purpose of extracting any shalyam that has pricked into the external canals or passages of the body, or for inspecting the seat of affection as in piles, etc., or for sucking (blood, etc. from any affected part), or simply as accessories to other surgical appliances. The length and circumference of a Nádi Yantra should be made to commensurate with those of the passage (Srota) or outlet of the human system into which it is intended to be introduced. We shall describe, later on, the types of Nádi Yantras which are to be used in connection with such diseases as fistula in ano, piles, etc. or in tumours and ulcers, in Mutradvriddhi (Hydrocele) in Niruddha Prakásha (Phimosis), in Niruddha Guda (stricture of the rectum) and in ascites, as well as those to be used for the purpose of injecting anything into the urethra, the bowels, the vagina and the uterus, or are used in connection with medicated inhalation, or with those that are known as the Alávu Yantras (gourd used for cupping).

The **Shaláká-Yantras** (bougies) are of various shapes and serve a variety of purposes. The lengths and girths of these instruments should be determined

according to the necessity of each individual case. Four probes or directors (shaláká) in two pairs, are used for the purposes of searching (Eshana) pus in a suppurated (part or limb, or in connection with uplifting, cutting and thereby withdrawing a shalyam from the part it has pricked into, or with a view to transfer such a body from one place to another (Chálanam), or for the purpose of extracting it (Shalyam) from the affected part. The mouths of the two types of these directors respectively resemble those of a Gandupáda (earthworm) and of a Sharapunkha (Tephrosia Purpurea, Pers) while the other two are respectively headed like the hood of a serpent and a fish hook. A couple of directors are used for the purpose of withdrawing a foreign matter (Shalyam) imbedded in any outer canal of the body (Srotas). The top-ends of these directors are bent down a little, and they resemble a lentil seed in size. Six types of directors or probes are used in cleansing (the pus from an affected part of the human organism) and their top-ends are fitted with caps of loose cotton. The three sorts of directors used in applying alkaline medicines, are shaped like ladles, and their mouths resemble the cavities of little stone mortars (Khala.) Of the six sorts of directors used in connection with the process of cauterisation (Agni-Karma) three are mouthed like the Jamboline fruit, while the other three are faced like a mace or a spear (Ankusha). A kind of director used in removing nasal

tumours, is mouthed like the half of the kernel found in the inside of a Jujube-stone, with a little dip in the middle, its lip or end having a keen or sharp edge. The ends of the type of probe used in applying Anjanams (medicated collyria) to the eyelids are wrought into two small round lobes like the Matara pulse and are blunted, while the sort of probe used in cleansing the urethra, is made round like the end of the stem of a Málati flower.

The Upa-yantras or minor surgical accessories—include such substances as rope, the Veniká (braided hair), silk thread, the bark and the inner-skin of trees, creepers, linen, Ashthilá (stones), large oval shaped pebbles, a hammer, the palms of the hands, the soles of feet, fingers, tongue, the teeth, the nails, hair, the mane of horses, branches of trees, a magnet, alkali, fire, and medicine, and such acts as spitting, straining (kunthanam), exhilaration and intimidation.

Metrical texts:—These accessories should be applied to the entire body of a patient, or to any part thereof such as, the arteries, the viscera, or the joints, according to the necessities of each case to be determined by the surgeon.

The Functions of Surgical Instruments:—are striking out (Nirghátanam–lit :—withdrawing a Shalyam by moving it to and fro), injection or filling, binding, up-lifting, cutting and

thereby withdrawing a Shalyam, resetting by means of a twirling motion, removing of a Shalyam from one place to another, twisting, expanding, pressing, purifying of a passage, drawing off, attracting, bringing to the surface, uplifting, lowering down, applying pressure all round a part, or an organ, agitating, sucking, searching, cutting or cleaving, straightening, washing or flushing, stuffing the nose and cleansing. They number twenty-four in all.

Metrical texts :—The intelligent surgeon shall exercise his judgment and determine the nature of the surgical operation required in each individual case, for surely the shalyas requiring a surgeon's aid are infinitely varied in their character.

An appliance (Yantra) which is too thick, or (made of inferior metal and hence) not substantially made, or too short or too long, or does not admit of being easily handled and is incapable of taking in the entire Shalyam, or is curved, loosely fitted, or soft-bolted, or loosely tied up with cords, (should not be used in surgical operations). These are the twelve defects of a surgical instrument.

Metrical texts :—The use of an instrument devoid of the abovesaid defects and measuring eighteen fingers in length, is commended in surgical operations. Shalyas which are manifest and visible to the naked eye, should be extracted with the instruments of the

Sinha-mukha (lion-mouthed) type, while those that can not be seen, should be removed with the help of the Kanka-mukhas (heron-mouthed) instruments, etc., according to the directions laid down in the Shástras (medical or surgical works of recognised authority). The Kanka-mukhas are the best of all other types of instruments, inasmuch as they can be inserted and taken out without the least difficulty, are capable of drawing out a Shalyam with the greatest ease, and are applicable to all parts of the human body (be they an artery or a bone-joint.)

Thus ends the seventh chapter of the Sutrasthánam of the Sushruta Samhitá which treats of the shape, construction and dimensions of surgical appliances.

CHAPTER VIII.

Now we shall discuss the Chapter which treats of instruments used in connection with a surgical operation. **(Shastravacharaniyamadhyayam).**

These instruments are twenty in number such as, the Mandalágram, the Karapatram, the Vriddhipatram, the Nakhashastram, the Mudriká, the Utpalapatram, the Arddhadháram, the Suchi, the Kushapatram, the Átemukham, the Sharárimukham, the Antarmukham, the Trikurchakam, the Kutháriká, the Vrihimukham, the Ará, the Vetasapatrakam, the Vadisha, the Dantashanku, and the Eshani.*

* The Mandalágram measures six fingers in length and is provided with a round or circular face. The Karapatram is the same as the modern saw. The term Vriddhipatram signifies a razor. A Vriddhipatram measures seven fingers in length, the handle alone measuring five fingers. The Nakhasastram is the same as the modern nail-clipper, the blade of the instrument measuring a finger in breadth. The Utpalapatram resembles a lotus leaf in shape. The Arddhadháram (lancet) measures eight fingers' breadth in length, being one finger broad at the middle, and two fingers at the blade. The Suchi is the same as the modern needle. The Kushapatram is so called from its resemblance to the blade of a Kusha-grass. An Átemukham resembles the bill of a bird of the Áte species. The blade of an Átemukham measures two fingers in length, the handle measuring five fingers and thus giving an entire length of seven fingers. The Sharárimukham (scissors) is so-called from the resemblance of its blades to the bills of a Sharári bird and looks somewhat like a modern black-smith's clipper, the measure of its entire length being twelve fingers. The Antarmukham is semicircular in shape and is provided with a toothed edge like that of a hand-saw. The Trikurchakam (trocar) is provided with three separate blades. The intervening space between the couple of blades attached to a handle measuring five fingers in length, is equal to the width of a Vrihiseed, its entire length being eight fingers.

Of the abovesaid instruments the Mandalágram and the Karapatram should be used in incising and scraping. The Vriddhipatram, the Nakhasastram, the Mudriká, the Utpalapatram, and the Arddhadháram, should be employed in incising (Chhedanam) and excising (Bhedanam); and the Kushapatram, the Shuchi, the Átemukham, the Sharárimukham, the Trikurchakam and the Antarmukham should be made use of in exudating or secreting (Visrávanam.) The Kuthárika, the Vrihimukham, the Ará, the Vetasapatram and the Suchi (needle) should be used in puncturing. The Vadisha and the Danta-Shanku should be used in extracting solid bodies. The Eshani (probe or director) in probing or searching the course or direction of the pus (in a suppurated part), and the Suchi (needle) should be used in suturing. Thus we have explained the eight different functions of the instruments in connection with surgical operations.

The kuthárika (small, blunt axe) measures seven fingers and a half in the handle, the blade is half a finger in width and is blunted like the tooth of a cow. The Vrihimukham measures six fingers in its entire length and its top is like that of a Vrihi seed, and the edge is cut into small thorn-like projections. The Ará resembles the awl of a cobbler and measures ten fingers in its entire length, the blade is wide as the seed of a sesamum and has the girth of a Durva (grass) stem. The Vetasapatram (knife) resembles the leaf of a Vetasa plant. The blade is four fingers in length, one finger in width, and is keenly edged, the handle measuring four fingers in length. The Vadisha is shaped like a modern fishing hook. The Danta-shanku (pincers for extracting teeth) somewhat resembles the Vrihimukham in shape. The face of an Eshani (probe) is like that of a Gandupáda (earth-worm).

Now we shall deal with the mode of handling the abovesaid instruments.—The Vriddhipatram and other instruments for excising (Bhedanam) should be caught hold of at a part between the blade and the handle. In acts of scraping the Vriddhipatram and the Mandalágram should be handled with the palm of the hand slightly turned up. The instruments for secreting should be caught hold of at the roots of their blades at the time of using them, while in the case of a king, an old man, a timid or a delicate person, a child, a woman and specially in the case of a prince of the royal blood, the Trikurchakam should be used when any secreting or exudating operation would be necessary. The handle of a Vrihimukham should be kept concealed within the palm of the hand and the blade should be caught hold of with the thumb and the index finger (Pradeshini). The Kuthárika should be first supported on the left hand and then struck with the thumb and third finger of the right. The Ará, the Karapatram and the Eshani, should be caught hold of at their roots. The rest of the surgical instruments should be grappled according to requirements.

The abovesaid instruments are shaped like things which their very names imply, as have been already described. The Nakashastram and the Eshani measure eight fingers in length. The Suchi (needle)

shall be described later on. The top-ends of the Vadisha and the Danta-Shankhu (Dental pincers) are a little bent down and their faces are made to resemble sharp thorns, or the newly sprouted leaves of a barley plant. The top-end of an Eshani closely resembles the mouth of an earth-worm. The length of a Mudriká should be made equal to that of the top phalanges of the index finger (of a man of average height.) A Sharárimukham measures ten fingers in length. The rest of the instruments are mostly made to measure six fingers in length.

Commendable features in a Surgical instrument :—Instruments that are fitted with handles of easy grip and are made of good and pure iron, well shaped, sharp, and are set with edges that are not jagged and end in well formed points or tops, should be deemed as the best of their kind.

Curvature, bluntness (Kuntha—lit :—incapable of cutting hair), unequal sharpness of the edge, rough-edgedness, over-thickness, over-thinness, over-lengthiness, and over-shortness are the defective traits in a surgical instrument. Those possessed of contrary features should be used. But a Karapatram set with a very rough (dentated) edge may be used for the purpose of sawing the bones.

A surgical instrument meant for excision (Bhedanam) should be set with an edge as thin as that of a Musura

pulse (lentil seed), while an instrument used in scraping should be set with an edge half as thin as that of the former. An instrument used either in connection with the measures of secretion or cutting by uplifting (Vyadhanam) should be set with an edge as fine as the human hair, while an instrument of incision should have an edge half as thin as that of the former.

Surgical instruments should be tempered with one of the three substances such as, alkali, water, and oil. Instruments used in cutting an arrow, a bone, or any foreign matter (Shalyam) pricked into the human body, should be tempered with alkali, whereas those that are made use of in cutting, cleaving, and lopping off the flesh (from an affected part), should be tempered with water. Instruments used in opening (Vyadhanam) a vein (Shira) or in cutting open a nerve (Snáyu) should be tempered with oil, and should be whetted upon a species of stone-slab resembling a Masha pulse in colour, and their set-edge should be protected by putting it in a sheath made of Shálmali wood.

Authoritative verses on the subject :—An instrument, well-ground, well-shaped, fitted with a convenient handle and capable of (laterally) cutting a hair in two and made according to measures laid down in the Shastras, should be alone used in a surgical operation.

The Inferior or substitutive instruments (the Anu-Shastras) :—The skin of bamboos, crystals, bits of glass, Kuruvindas (a sort of crystal) leeches, fire, alkali, nails, the leaves of trees known as Goji, Shephaliká and Shákapatra, the tender sprouts of corn, hair, and the fingers, should be included within the category of the minor instruments of surgery and (which may be used in certain instances in substitution for the principal and usual ones.)

Metrical texts :—The four articles such as strips of bamboo skin, crystals, bits of glass, and the rock known as Kuruvinda, should be used by an intelligent physician in incising or excising (Bhedanam) operations, where the patient would be found to have a dread of the knife, or too young to be surgically operated upon with it, or where the proper instrument cannot be procured. The nails of fingers should be used in operations of incising, excising or extracting in (substitution for the instruments enjoined to be used for the purpose), when such a course would appear feasible. The processes of applying alkalis, leeches and cauterisation will be dealt with later on. In Diseases affecting the eyelids or the cavity of the mouth, operations for the purposes of secreting or evacuating (the accumulated pus or phlegm), may be performed with the leaves of Shákapatra, Shephálika or Gojis. In the absence of a probe or director, searching may be done with the help

of a finger, or with a hair, or with a corn sprout. An intelligent physician should deem it his imperative duty to get his surgical instruments made by a skilful and experienced blacksmith, and of pure, strong and sharp iron (steel). A physician, skilled in the art of using surgical instruments, is always successful in his professional practice, and hence the practice of surgery should be commenced at the very outset of medical studies.

Thus ends the eighth chapter of the Sutrasthánam in the Sushruta Samhitá which treats of Surgical Instruments.

CHAPTER IX.

Now we shall discuss the Chapter which treats of practical instructions in surgical operations **(Yogya-Sutra).**

The preceptor should see his disciple attends the practice of surgery even if he has already thoroughly mastered the several branches of the science of Medicine, or has perused it in its entirety. In all acts connected with surgical operations of incision, etc. and injection of oil, etc. the pupil should be fully instructed as regards the channels along or into which the operations or applications are to be made (Karma-patha). A pupil, otherwise well read, but uninitiated into the practice (of medicine or surgery) is not competent (to take in hand the medical or Surgical treatment of a disease). The art of making specific forms of incision should be taught by making cuts in the body of a Pushpaphalá (a kind of gourd), Alávu, watermelon, cucumber, or Erváruka. The art of making cuts either in the upward or downward direction should be similarly taught. The art of making excisions should be practically demonstrated by making openings in the body of a full water-bag, or in the bladder of a dead animal, or in the side of a leather pouch full of slime or water. The art of scraping should be instructed on a piece of skin on which the hair has been allowed to remain. The art of venesection

(Vedhya) should be taught on the vein of a dead animal, or with the help of a lotus stem. The art of probing and stuffing should be taught on worm (Ghuna) eaten wood, or on the reed of a bamboo, or on the mouth of a dried Alávu (gourd). The art of extracting should be taught by withdrawing seeds from the kernel of a Vimbi, Vilva or Jack fruit, as well as by extracting teeth from the jaws of a dead animal. The act of secreting or evacuating should be taught on the surface of a Shálmali plank covered over with a coat of bee's wax, and suturing on pieces of cloth, skin or hide. Similarly the art of bandaging or ligaturing should be practically learned by tying bandages round the specific limbs and members of a full-sized doll made of stuffed linen. The art of tying up a Karna-sandhi (severed ear-lobe) should be practically demonstrated on a soft severed muscle or on flesh, or with the stem of a lotus lily. The art of cauterising, or applying alkaline preparations (caustics) should be demonstrated on a piece of soft flesh ; and lastly the art of inserting syringes and injecting enemas into the region of the bladder or into an ulcerated channel, should be taught (by asking the pupil) to insert a tube into a lateral fissure of a pitcher, full of water, or into the mouth of a gourd (Alávu).

Authoritative verses on the subject :—An intelligent physician who has tried his

prentice hand in surgery (on such articles of experiment as, gourds, etc., or has learnt the art with the help of things as stated above), or has been instructed in the art of cauterisation or blistering (application of alkali) by experimenting on things which are most akin, or similar to the parts or members of the human body they are usually applied to, will never lose his presence of mind in his professional practice.

Thus ends the ninth chapter of the Sutrasthánam in the Sushruta Samhitá which treats of Instructions in Surgical operations.

CHAPTER X.

Now we shall discuss the Chapter which treats of the essential qualifications of a physician before he formally enters his profession **(Vishikhanupraveshaniya-madhyayam).**

A physician having thoroughly studied the Science of medicine, and fully pondered on and verified the truths he has assimilated, both by observation and practice, and having attained to that stage of (lucid) knowledge, which would enable him to make a clear exposition of the science (whenever necessary), should open his medical career commence practising) with the permission of the king of his country. He should be cleanly in his habits and well shaved, and should not allow his nails to grow. He should wear white garments, put on a pair of shoes, carry a stick and an umbrella in his hands, and walk about with a mild and benignant look as a friend of all created beings, ready to help all, and frank and friendly in his talk and demeanour, and never allowing the full control of his reason or intellectual powers to be in any way disturbed or interfered with.

A physician, having met with a messenger of happy augury, or having been encouraged on his journey by the notes of auspicious birds or sights, should go to the house of his patient. [Then, having entered the

sick room], the physician should view the body of his patient, touch it with his own hands, and enquire (about his complaint). Several authorities hold that these three, (inspection, touch and questioning) largely form the means of our ascertaining the nature of a disease. But that is not correct, inasmuch as the five sense-organs of hearing, sight, etc. and oral enquiry materially contribute to a better diagnosis.

Diseases, which are to be diagnosed with the help of the organ of hearing, will be fully treated, later on, in the Chapter on Vrana-Sráva (secretions from an ulcer). The wind (Váyu), making the blood ebullient, forces it up with a distinctly audible report and thus affects the sense of hearing. But this will be dealt with later on in the abovesaid chapter. The heat and coldness of the body, or the gloss, roughness, hardness, or softness of the skin of the affected part as in fever, or in an œdematous swelling of the body, are perceptible by the sense of touch. Fullness or emaciation of the body (cachexia), state and indications of vitality, strength, complexion, etc. are perceived by the sense of sight. Secretions or discharges (from the inflamed mucous membrane of the urethra) in Prameha etc., should be tested with the organ of taste.* The characteristic smell emitted

* The sweet, or any other taste of the discharges should be inferred from the fact of their being or not being swarmed with hosts of ants or flies, etc.

by an ulcer in its critical stage (Arishta) should be determined with the help of the organ of smell.

While such facts as the time or season (of the first appearance) of the disease, the caste which the patient belongs to, and things or measures which tend to bring about a manifest amelioration of the disease, or prove comfortable to the patient (Sátmyam) as well as the cause of the disease, the aggravation of pain, the strength of the patient, and his state of digestion and appetite, the emission of stool, urine and flatus, or their stoppage, and the maturity of the disease as regards time, should be specifically ascertained by directly interrogating the patient (on those subjects). Though the abovesaid five organs of sense, like the three fundamental vital humours, help us to make the correct diagnosis of a disease, still the objects locally perceived by these senses should not be left out of account in ascertaining its specific nature.

Authoritative verse on the subject:—A disease wrongly observed or incorrectly described, or wrongly diagnosed, is sure to mislead a physician.

Having made these observations the physician will try to cure diseases that are curable, adopt palliative measures in cases where palliation is the only remedy that can be offered, and give up a case which is beyond

all medical treatment, and mostly those which are of more than a year's standing. Diseases affecting a Bráhmana well versed in the Vedas, or a king, or a woman, or an infant, or an old man, or a timid person, or a man in the royal service, or a cunning man, or a man who pretends to possess a knowledge of the science of medicine, or a man who conceals his disease, or a man of an excessively irascible temperament, or a man who has no control over his senses, or a man in extremely indigent circumstances of life or without any one to take care of him, are apt to run into an incurable type though appearing in a common or curable form at the outset. The physician, who practises his art with a regard to these facts, acquires piety, wealth, fame and all wished for objects in life.

Authoritative verse on the subject:—A physician should abjure the company of women, nor should he speak in private to them or joke with them. A physician is forbidden to take anything but cooked rice from the hands of a woman.

Thus ends the tenth Chapter of the Sutrasthánam in the Sushruta Samhitá which treats of the essential qualifications of a physician.

CHAPTER XI.

Now we shall discuss the Chapter which treats of the pharmacy of alkalis or potential cauteries **(Kshára-páka-vidhi-madhyáyam).**

In cases that require incising, excising and scraping, alkalis or alkaline preparations are of greater importance than surgical instruments and appliances (both principal and secondary or substitutive), as they are possessed of the virtues of subduing the three deranged bodily humours (such as wind, bile and phlegm).

The etymological signification of the term Kshára (alkalis) is based on their property of corroding (the skin or the flesh of an affected part of the body), or on their peculiar quality in destroying the skin and flesh where such an effect is desired). Since a variety of substances enter into the composition of Kshára (alkalis), they are endued with the virtue of subduing the three deranged bodily humours. Owing to their white colour, Ksháras should be included within the category of cooling substances (Saumya).

But since many drugs or substances of a hot or fiery nature (Ágneya) enter into their composition, Ksháras (alkalis) are endued with the properties of blistering, burning, suppurating (Páchana), opening etc., without

involving any contradiction to their generic (Saumya) nature, and hence they are included within the list of those substances which are both hot and cooling (Saumya and Ágneya in their virtues. They are pungent in taste, of a heat-making potency, irritant, digestive, corrosive, absorbent, liquefacient, improve unhealthy sores and granulation, and act as styptic and paralysing agents. They exercise destructive action on animal tissues. They are antitoxic, anthelmintic and possess the property of curing mucous accumulations in the intestines. They tend to reduce fat and phlegm and they have the virtue of destroying skin diseases. In large doses, (alkalis) have the effect of destroying the virile potency of a man.

Kshára (caustics) may be grouped under two distinct heads (according to their mode of administration), such as the Pratisáraniya (for external application) and the Pánia (alkaline potions). Alkaline preparations should be externally used in such skin diseases as Kitima, Dadru, Kilás, Mandala, Fistula in ano, tumour, bad ulcer (Dushta Vrana), sinus, Charma-kila, Tilkálaka, Nacchya, Vyanga, Mashaka and external abscesses and hœmorrhoids. In cases of worms and poisoning as well as in the seven forms of diseases which affect the cavity of the mouth, such as Upajihva, Upakusha, Danta-Vaidarbha, and in the three types of Rohini, external applications of alkalis act like substitutive

surgical instruments. Alkaline potions or any other internal use of alkalis, should be prescribed in cases of Gulma (abdominal glands), Ascites, loss of appetite, indigestion, flatulent distension of the abdomen with suppression of stool and urine, urinary calculi, stone in the bladder, internal abscesses, worms in the intestines and hœmorrhoids, as well as for subduing or eliminating any sort of poison from the system.

Alkalis or alkaline potions will prove positively injurious to a patient laid up with fever or hæmoptysis, to a man of bilious temperament, to an infant, or to an old man, and they will work similar mischief in a weak person, or in a patient suffering from vertigo, insensibility, syncope and Timira (darkness of vision). These preparations of Alkalis should be made in one and the same way by filtering ; and we reserve the full description of this process for another occasion.

Alkalis for external application are prepared in three different potencies ; the mild, middling and strong (extremely irritant). A physician wishing to prepare such an alkali, should first purify his body and mind, and observe a fast on a day in autumn marked by auspicious astral combinations. Then having ascended the brow of a hill, he should select a full grown Ashita-mushka (Ghantá párul) tree of middle age, and growing on soil recommended in the works on pharmacy and not anywise affected. Then having

formally invoked the spirit of the aforesaid tree, which bears no white flowers) the physician should fell it on the day following,—reciting the Mantra which reads as :—" O thou possessed of mighty virtues, O thou endued with fiery potency, may thy potency never decrease or vanish. Stay here, O thou blissful one, execute my work, and after the performance thereof thou shalt be at liberty to ascend to the heavenly regions."

Then having performed the Homa ceremony with thousands of white and red flowers, the physician should cut the wood of the abovesaid tree into small pieces and put them in a place protected from the wind. Then having placed pieces of unslaked limestone over them, the physician should burn them to ashes with the lighted faggots of dried sesamum plants. Then after the fire has fairly burnt itself out, the ashes of the limestone and the Ghantá-párula wood should be separately collected and stored. Similarly the wood as well as the leaves, roots and fruits of Kutaja, Palásha, Ashvakarna, Páribhadra, Vibhitaka, Áragvadha, Tilvaka, Arka, Snuhi, Apámárga, Pátalá, Naktamála, Vrisha, Kadali, Chitraka, Putika, Indra-Vriksha, Ásphotá, Ashvamáraka, Saptachchhada, Agnimantha, Gunjá, and the four species of Koshátaki, should be burnt down to ashes.

Then a Drona measure of the ashes thus prepared* should be dissolved and stirred up in six Drona measures of pure water or cow's urine, and be filtered twenty-one times in succession. The (alkaline water filtered as above) should be kept in a large caldron over a fire and boiled by gently agitating it with a ladle. . It should be taken down from the fire when by gradual stirring, the saturated water would appear transparent, slimy, red and irritating. It should then be filtered through a piece of clean linen, and the dregs thrown away. After this a Kudava measure and a half (12 Palas) of the (abovesaid) saturated or alkaline water should be taken out of the caldron, and the rest should be again kept boiling over the fire. Following this, substances known as Kata-Sharkará, the ashes of the burnt limestone previously obtained, Kshirapákas (fresh water oysters) and Sankhanábhi, should be burnt red hot in equal proportions, and then immersed and pressed in the Kudaba measure of alkaline water previously set apart in an iron basin as above described.

Then having immersed eight Pala measures of the substances known as the Shankhanábhi etc., in the abovesaid alkaline water, the physician should boil it by continuous and steady stirring, care being

* Two parts of the burnt ashes of Ghantá-párula and one part of the ashes of Kutaja, etc.

taken not to make it of too thin nor of too thick a consistency. Then the basin or the caldron should be taken down from the oven, and its contents poured into an iron pitcher, carefully covering its mouth after filling it. The alkali thus prepared is called the Kshára (alkali of middling potency, which, if prepared without the subsequent addition (lit : throw-over) of the ashes of Katasharkará, etc., goes by the name of mild alkali (Mridu Kshára). Similarly, alkali prepared with the addition of the powders of the drugs known as Danti, Dravanti, Chitraka, Lángulaki, Putika-Praväla Talpatri, Vidha, Suvarchiká, Kanaka-Kshiri, Hingu, Vachá, and Vishá, or with as many of them as are available, each weighing four tolas, is called the strong Kshára (extremely irritating alkali). These alkaline preparations of different potencies, should be severally used in cases where their administrations would be clearly indicated. An alkaline preparation, any way weakened, should be strengthened by adding to it alkaline water (water saturated with an alkali) as before described.

Authoritative verses on the subject ; The commendable features in an alkali are based on its whiteness, on its being neither too mild nor too strong, on its gloss and sliminess, on its sticking to the place of application, and on its power of secreting (Abhisyandi) the morbid fluid, and on its rapid effect. On the other hand, its defective traits consist in its being

too mild, of excessive whiteness, excessive strength or irritability, of over-sliminess, excessive stickiness or thickness, insufficient boiling, and insufficiency of component ingredients.

A patient laid up with a disease amenable to an application of alkali (potential cautery or caustic) should be kept in a spacious chamber, and should not be exposed to draughts and to the hot rays of the sun, [Then the physician having secured] the necessary appliances etc, as already laid down in the Chapter V, should view the part of the patient's body to which the alkali is to be applied. The affected part should be then* rubbed or scarified† with an alkali, and covered over‡ with a piece of linen. The alkaline preparation should be applied with a rod or director* and kept undisturbed for a period needed to articulate a hundred long letter sounds).

Metrical texts : The perfect burning (blistering) should be inferred from the black colour of the skin of the affected part. Madhuka and the substances included within the Amla-varga (group of acid drugs) pasted with clarified butter, should be applied to allay the incidental burning (sensation). A plaster composed

* In a case brought about by (Pitta) ascendency of the deranged bile.

† It should be scraped with the alkali where the skin would appear hard and benumbed owing to the action of the deranged vital winds (Váyu).

‡ In a case of deranged phlegm (Kafa) the affected part being marked by itching and swelling.

of the shreds of Amla-Kánjika, sesamum and Madhukam taken in equal parts, and pasted together, should be applied to the part burnt with an alkali ; in the event of the latter having failed to produce the desired effect owing to the disease being deeply seated. Madhukam and the Kalka paste of sesamum mixed with clarified butter would cause such an (incidental) ulcer to heal.

Now you may ask the question how can an acid substance, which is fiery in its virtue and heat-making in its potency, tend to subdue the effects of an alkali which is possessed of simllar virtues and properties, instead of augmenting them, as can naturally be apprehended ? Well my child, the question can be fairly answered by stating, that substances of all tastes enter into the composition of an alkali except the acid one. The pungent (Katu) taste is the principal taste of an alkali, while the saline (Lavana forms its minor or accessory flavour (Anurasa). Now this saline taste in conjunction with the acid one renounces its extremely sharp or irritating property and is thus transformed into one of sweetness or of soothing virtue. Hence it is that an acid taste tends to allay the burning incidental to an application of alkali (potential caustic) in the same way as water tends to put out fire.

An operation of perfect cauterisation with an alkaline application brings about an amelioration of the disease, or the disease is entirely subdued, accompanied by

lightness of the limbs and absence of secretion from the affected part ; while an insufficient burning [of the part] is generally attended by symptoms of aggravation of the malady and also gives rise to local pain, itching and numbness. [On the other hand], excessive burning [of the part] with an alkaline preparation may have a fatal termination, and is attended by such symptoms as burning, suppuration, redness, secretion in and from the seat of affection. A feeling of languor and fatigue comes upon the patient accompanied with thirst, swooning and an aching sensation. An ulcer incidental to a burn by an alkali should be treated with a special eye to the nature of the disease and the deranged bodily humour specifically involved in the case.

A weak person, an infant, an aged person, a man of timid disposition, a patient suffering from abdominal dropsy with general anasarca or from hæmoptysis, a pregnant woman, a woman in her menses, a person suffering from an attack of high fever or urethral discharges, or emaciated with chronic inflammation of the lungs, or a person subjected to fits of fainting or abnormal thirst, or a person suffering from virile impotency, or whose testes have become deranged either upwards or downwards, or a woman suffering from retroversion or introversion of the uterus or prolapsus of the vagina, should be deemed

unfit for being cauterised with alkalis. Moreover their application is not to be sanctioned over the veins, nerves, joints, gristles or tender bones or cartilages, sutures, arteries, throat, umbilicus, genitals, regions of Srotas (external channels), parts covered over with a thin layer of flesh, inside the nails and other vulnerable parts of the body, nor in diseases of the eyes, excepting those which affect the eyelids.

Alkalis fail to produce any beneficial effect in a patient suffering from œdema of the limbs, or suffering from bone-ache, or laid up with a disease affecting the joints or the heart, or in a person of impaired appetite who has lost all relish for food, even when their use is otherwise indicated.

Authoritative verse on the subject :—An Alkali administered by an ignorant physician is to be dreaded more than poison, fire, blows with a weapon, thunder-bolts, or death itself; while in the hand of an intelligent physician it is potent enough to speedily subdue all serious diseases in which its use is indicated.

Thus ends the eleventh Chapter of the Sutrasthánam in the Sushruta Samhitá which treats of the Pharmacy of Alkalis.

CHAPTER XII.

Now we shall discuss the Chapter which treats of cauteries and the rules to be observed in their use **(Agni-Karma-Vidhimadhyayam).**

A fire (cautery) is better than an Alkali as far as its healing property is concerned. A disease burnt with fire, is cured for good and knows no recrudescence ; and diseases which ordinarily baffle the skill of a surgeon or a physician, and never prove themselves amenable to medicinal or surgical remedies, are found to yield to fire (cauterisation).

The following drugs, articles and substances should be understood as accessories to an act of cauterisation, *viz.*, Pippali, the excreta of goats, the tooth of a cow (Godanta), Shara, a rod, the surgical instrument known as the Jámvavaustha, articles made of copper or silver, honey, treacle, oil, or any other oily substance. Out of these, Pippali, the Godanta, Shara and the rod should be (made red hot and) used in cauterising the affected part in a disease which is restricted only to the skin ; similarly the surgical instsument known as the Jámvavaustha, as well as the appliances made of copper or silver should be used in a disease which is seated in the flesh. Honey, treacle and oil should be (boiled and employed in cauterising the disease

which affects any of the veins, nerves, bones or bone-joints.

Cauterisation is admissible in all seasons of the year except summer and autumn; but no such distinction should be observed in cases of impending danger, when it should be practised with the help of such appliances of a contrary (cooling) nature, [as wet sheets, cooling drinks and cooling plasters, etc.]

In all diseases and in all seasons of the year, the patient should be fed on a diet of slimy (mucilaginous) food before actually applying the cautery ; while the patient should be kept on an empty stomach before the act where the complaint would be a case of Mudagarbha (false presentation), fistula in ano, hæmorrhoids or a disease affecting the cavity of the mouth.

According to certain authorities the processes of cauterisation may be grouped under two heads according as the skin or the flesh is cauterised. The present work does not lay any injunction against the cauterisation of any nerve, vein, bone or bone joint (as stated before). A burning of the skin is accompanied by a peculiar bursting or cracking sound. The skin becomes contracted and emits a fetid smell. Similarly, in a case where the flesh is burnt, (the affected part) assumes a dove color of (blackish brown), marked by pain and a little swelling, and the incidental ulcer becomes dry and contracted. In the case where a nerve or a vein

is burnt, the ulcer presents a raised (elevated) and black aspect with the stoppage of all secretions; while an ulcer incidental to the cauterisation of any of the bone joints has a parched red hue and becomes hard and rough.

The regions of the eye-brows, forehead and temple-bones, should be cauterised in diseases affecting the head as well as in a case of Adhimantha (Ophthalmia). In diseases affecting the eyelids the eye should be covered over with a moist piece of Alaktaka (a thin pad of red pigment principally used in dyeing the feet of ladies) and the roots of the eyelashes should be duly cauterised. Cauterisation is specifically enjoined to be resorted to in cases of glandular inflammation, tumour, fistula in ano, scrofula, elephantiasis, Charmakila, warts, Tilakálaka, hernia, sinus hœmorrhage, and on the occasion of cutting a vein or a bone joint, as well as in the event of the vital wind (Váyu) being extremely agitated and lodged in the local skin, flesh, vein, nerves and the bone-joints and giving rise to excruciating pain in and about the ulcer which in consequence presents a hard, raised and inert surface.

The modes of cauterisation vary according to the seat of the disease, and number four in all, *viz.*, the Ring, the Dot, the Lateral or Slanting lines, and the Rubbing modes.

Authoritative verse on the subject:— A physician, after having carefully considered the seat of the disease and judiciously ascertained the patient's strength and the situations of the Marmas (the vital parts of the patient's) body, should resort to cauterisation with an eye to the nature of the malady and the then prevailing season of the year.

The part, after being properly cauterised, should be rubbed with an unguent composed of honey and clarified butter. A man of bilious temperament or with a quantity of bad blood lying stagnant and locked up in any part of his body, or of lax bowels, a person with any foreign substance (such as a thorn or a splinter still lodged in his body), a weak or an old man, an infant, or a man of timid disposition, or a person afflicted with a large number of ulcers, as well as a patient suffering from any of the diseases in which diaphoretic measures are forbidden, should be regarded as a subject unfit for cauterisation.

Now we shall describe the characteristic symptoms of the several kinds of burns other than those caused (for surgical purposes). Fire feeds both upon fatty and hard fuels, [such as oil and logs of wood etc.]. Hot or boiling oil has the property of permeating or entering into the minutest nerves and veins, and

hence, it is capable of burning the skin, etc. Accordingly an ulcer incidental to such a burning (scald) is characterised by extreme pain, etc.

Burns may be grouped under four distinct heads viz., the Plushtam, the Dur-Dagdham, the Samyag-Dagdham and the Ati-Dagdham. A burn characterised by the discolouring of its seat and extreme burning and marked by the absence of any vesicle or blister, is called the Plushtam, from the root "plusha" to burn. A burn, which is characterised by the eruption of large vesicles or blisters, and assumes a red colour, and is characterised by excessive burning and a kind of drawing pain, and which suppurates and takes a long time to heal, is called the Dur-Dagdham (bad burn or scald). A burn, which is not deep (superficial) and assumes the colour of a ripe Tála fruit, and does not present a raised or elevated aspect and develops the preceding symptoms, is called the Samyag-Dagdham (fully burnt one). A burn in which the flesh hangs down, and where the veins, nerves and bones are destroyed, accompanied with fever, burning, thirst, fainting and such like disturbances, and which leads to a permanent disfiguration of the body, retarding the healing of the incidental ulcer which leaves a discoloured cicatrix even after healing, is called the Ati-Dagdham (over burnt one). A physician should try to heal any of these four types of burns with the measures already laid down before.

Authoritative verses on the subject.—The blood of a man is agitated and made hot by fire, and the blood thus heated tends to excite or causes it to raise the bile. And since fire and bile (Pittam) are similar in their taste, essence, effect, potency and natal factors, the effects of Pittam (burning sensation etc.), are naturally aggravated and augmented through a contact with fire. Blisters or vesicles crop up in rapid succession and mark the seat of burning, and fever, thirst, etc., supervene.

Now I shall describe the course of medical treatment to be adopted for the cure of burns. Hot and dry fomentations, as well as warm plasters should be applied to a burn of the Plushtam type, and a course of hot food and drink should be likewise prescribed for the patient. The blood becomes thin when the body is diaphorised by means of warm fomentations, and water, in virtue of its natural cooling properties, tends to thicken the blood. Hence warm fomentations or applications exercise curative virtues in the case of a burn of the foregoing type, and water or cold applications produce the contrary effect.*

Both warm and cold measures are to be adopted in the case of a burn of the Dur-Daghdha type, the

* By arresting the radiation of the incarcerated heat and thereby favouring the elevation of the local temperature and the increase of the burning sensation.

medicinal remedies consisting of cold applications and unguents of clarified butter.*

A plaster composed of Tugákshiri, Plaksha, Chandana, Gairika, and Amritam (Guduchi), pasted together with clarified butter, should be applied over a burn of the Samyag-Dagdha type, or the flesh of domestic or aquatic or amphibious animals should be pasted and plastered over the affected part. A burn of the present type, marked by excessive burning, should be medicinally treated in the same manner as a case of bilious abscess (Pitta-vidradhi).

In the case of a burn of the Ati-Dagdha (over-burnt) type, the loose or the dangling integuments (skin) and flesh should be removed, and cold applications should be made over the ulcer. Then the affected part should be dusted over with pulverised Shali rice, or a plaster composed of the pulverised skin of Tinduki and clarified butter pasted together, should be applied over its surface.† The affected part should be covered over with the leaves of Guduchi, or of lotus, or other aquatic plants, and all measures and remedial

* Cold applications and cooling measures should be resorted to in the case of a deep and excessive burn, while the contrary should be held as the correct remedy in the case of a slight and superficial one.

† Several authorities prescribe Tinduki bark and human cranium powdered together and mixed with clarified butter, while others prescribe a decoction of Tinduki bark.

agents, indicated in the case of a bilious erysipelas, should be resorted to in the present instance as well.

A plaster composed of bee's wax, Madhukam, Sarjarasa, Manjisthá, (red) Chandanam and Murvá pasted together and boiled with clarified butter should be regarded as beneficial to burns of all types to promote rapid healing.

In the case of a burn from boiling oil, clarified butter or such like substances should be externally applied and all measures which promote dryness of the part (Ruksha) should be adopted without the least hesitation.

Now we shall describe the symptoms which become manifest in a person [whose nostrils and larynx] are choked with smoke.—The respiration becomes laboured and hurried and the abdomen is distended accompanied by constant sneezing and coughing. The eyes look red and seem as if burning. The patient breathes out smoke and fails to catch any other smell than that of it. The sense of hearing is considerably affected ; the sense of taste becomes inert ; fever, thirst and a burning sensation supervene ; and the patient drops down utterly unconscious.

Now hear me discourse on the course of medical treatment to be adopted in the case of one

over-powered with smoke.—Emetics in the shape of clarified butter mixed with sugarcane juice or milk saturated with the juice of grapes, or lumps of sugar-candy dissolved in an adequate quantity of water, or any acid potion slightly sweetened, should be administered to the patient. The contents of the stomach are speedily discharged by vomiting; the distension of the abdomen is removed; the smell of smoke in the breath is mitigated, and the accompanying fever with (its concomitants) of sneezing, languor, thirst, cough, laboured breathing etc. is abated, and the patient is restored to consciousness. Gargles having a sweet, saline, acid or pungent (katu) taste restore the sense-perception of the patient, and gladden his mind. Medicated snuffs in adequate quantities should be administered by a well-read physician to such a patient, whereby his head, eyes and neck would be able to resume their normal functions. And a course of diet, which is light, emollient and not acid in its reaction, should be prescribed.

Cooling measures or applications should be prescribed or made in the event of any part of the body being scorched by excessive heat, or by being exposed to a draught of hot and parched wind. Similarly, hot and emollient measures or applications should be resorted to where any part of the body has become frozen or shrivelled by snow or cold winds. A person struck

by lightning should be regarded as beyond the pale of medicine.*

* **Additional texts** :—Where the scorching would be found to be considerably extensive ; otherwise such measures as lubrication with medicated unguents etc. should be adopted in a case where the patient is picked up alive.

Thus ends the twelfth Chapter of the Sutrasthánam in the Sushruta Samhitá which treats of Cauteries and the rules to be observed in their use.

CHAPTER XIII.

Now we shall discuss the Chapter which treats of leeches and of how and which to use **(Jalaukavacharaniyamadhyayam).**

Leeches should be applied where the patient would be found to be old or imbecile, or a woman, or an infant, or a person of an extremely timid disposition, or a person of a delicate constitution, and as such is not fit to be surgically operated upon, since this mode of bleeding is the gentlest that can be possibly devised. The blood vitiated by the deranged wind (Váyu), bile (Pittam), and phlegm (Kapham) should be respectively sucked through a horn, by leeches and a gourd appliance (Alávu-Yantra) or with whichsoever of them is available at the time, irrespective of the cause of such vitiation, whenever such bleeding or sucking would be found to be imperatively necessary.

Authoritative verses on the subject :—A cowhorn is described in the Shastras as of a hot or heat making potency, and as possessed of a slightly cooling (Snigdha) or soothing (Madhura) property. Accordingly it should be used in sucking the blood vitiated through the action of the deranged bodily wind. Leeches, which are born in water, are possessed of Madhura (sweet or soothing) properties, and hence they

should be used in sucking the blood vitiated through a deranged condition of the bile (Pittam). The gourd (Alávu) is pungent, parching and irritating in its potency and should be therefore used in sucking the blood vitiated through the action of the deranged phlegm (Kapham).

Mode of application :—The part from which the blood is to be sucked should be first scarified or slightly cut in two or three places, and then the mouth or the open end, of the horn, covered with a thin piece of muslin tied round its edges should be placed over it and sucked with the mouth through the aperture at its tip or top-end, or with a gourd appliance equipped with a lighted lamp placed in its inside.

The term Jalauká (leeches) may be etymologically interpreted to mean creatures whose life (Áyu) or whose longevity is in, or depends upon, water, whereas the derivative meaning of the term Jalauka (leeches) is based upon the fact of their dwelling ("Oka"—dwelling place) in water (Jalam). Leeches may be divided into twelve distinct species of which six are venomous, and six non-venomous. The six venomous species are named Krishná, Karvurá, Alagardá, Indráyudhá, Sámudriká and Gochandaná. The leeches of the first-named species (Krishná) are marked by thick heads, and of a colour resembling powdered lampblack. The leeches of the Karvurá type have extended or

elongated bodies like the Varmifishes, and are indented and thick at the waist. The Alagardá leeches are hairy, thick and round at the sides, and black at the mouth. The leeches of the Indráyudha species are marked on the surface with up-pointed rainbow coloured lines. The skins of the Sámudrikás are blackish yellow, dotted over with white spots of a variety of shapes. Leeches which are provided with narrow mouths and are marked by bifurcating line at the bottom like the scrotal sac of a bull are called Gochandanás.

A person bitten by any of the abovesaid venomous leeches has an irresistble inclination to scratch the seat of the bite which is marked by a considerable swelling. Fever, with burning, retching, drowsiness and delirium supervenes and ultimately the patient loses all consciousness. The remedy consists in the administration of an anti-toxic medicine known as Mahágada, as snuffs, potions and unguents, etc. A bite by an Indráyudha usually proves fatal. Venomous leeches, as well as cures for their bites, have thus been described.

The non-venomous species include Kapilás, Pingalás, Shankhamukhis, Musikás, Pundarimukhis and Sarávikás. The Kapilás are coloured like Manah-Shila (realgar) at the sides, and their backs are tinged with a glossy hue like that of a Mudga pulse. The Pingalás have a reddish colour, are round in shape and

capable of speedy locomotion. The Shankhamukhis are marked by a blackish red hue like that of the liver, are provided with sharp elongated mouths, and are capable of sucking blood with the greatest swiftness. The Musikás are coloured like the common blind moles, and emit a fetid smell from their bodies. The Pundarimukhás are coloured like the Mudga pulse and are so called from the fact of the resemblance of their mouths to the full-blown lotus lilies (Pundarikas). The Sarávikás have cold bodies marked with impressions like lotus leaves and measure eighteen fingers' width in length, and they should be employed in sucking blood from the affected parts of lower animals. This exhausts the list of non-venomous leeches.

The countries, such as Turkesthan (Yavana), the Deccan (Pandya), the tract of land traversed by the Ghaut mountains (Sahya), and Pautana (modern Mathura), are the natural habitats of these leeches. The leeches, found in the aforesaid countries, are specifically non-venomous, strong, large-bodied, greedy and ready suckers.

The venomous leeches have their origin in the decomposed urine and fecal matter of toads and venomous fishes in pools of stagnant and turbid water. The origin of the non-venomous species is ascribed to such decomposed vegetable matter, as the petrified stems of the several aquatic plants known as Padma, Utpalam,

Nalina, Kumuda, Pundarika, and the common zoophytes which live in clear waters.

Authoritative verse on the subject.—The non-venomous leeches swim about in sweet scented waters, live on non-poisonous weeds, lie on the leaves of flowering water plants instead of on the dank and oozy beds of pools, and suck blood from the affected part of a human organism without causing any discomfort.

Leeches should be caught hold of with a piece of wet leather, or by some similar article, and then put in to a large-sized new pitcher filled with the water and ooze or slime of a pool. Pulverised zoophytes and powder of dried meat and aquatic bulbs should be thrown into the pitcher for their food, and blades of grass and leaves of water-plants should be put into it for them to lie upon. The water and the edibles should be changed every second or third day, and the pitchers should be changed each week, (the leeches should be transferred to a new pitcher at the end of every consecutive seven days).

The authoritative verse on the subject :—Leeches that are venomous, thick about the middle, elongated, of slow locomotion, look fatigued, do not readily take to the part they are applied to, and capable of sucking only a small quantity of blood, should be looked upon as not belonging to the proper or the commendable type.

Then having seated or laid down the patient suffering from a disease which requires the application of leeches, the seat of bleeding, if not previously ulcerated, should be roughened by dusting it over with a composition of loose earth and pulverised cowdung. Then the leeches should be taken out of their receptacles and sprinkled over with water saturated with mustard seed and pasted turmeric. Then for a moment they should be kept in a basin full of water, and after they have regained their natural vivacity and freshness, they should be applied to the affected part. Their bodies should be covered with a piece of thin and wet linen, or with a piece of white cotton. The affected part should be sprinkled over with drops of milk or blood, or slight incisions should be made into it in the event of their refusing to stick to the desired spot. Other fresh leeches should be applied even when the preceding measures should prove ineffectual. That the leeches have taken to the affected part may be inferred from the mouths of the leeches assuming the shape of a horse-shoe, and the raised and arched position of their necks after they had become attached to the seat of the disease. While sucking, the leeches should be covered with a piece of wet linen and should be constantly sprinkled over with cold water.

A sensation of itching and of a drawing pain at the seat of the application would give rise to the pre-

sumption that fresh blood was being sucked, and the leeches should be forthwith removed.*

Leeches refusing to fall off even after the production of the desired effect, or sticking to the affected part out of their fondness for the smell of blood, should be sprinkled with the dust of powdered Saindhava (rock salt.)

After falling off, the leeches should be dusted over with rice powder and their mouths should be lubricated with a composition of oil and common salt. Then they should be caught by the tail-end with the thumb and the forefinger of the left hand and their backs should be gently rubbed with the same fingers of the right hand from tail upward to the mouth with a view to make them vomit or eject the full quantity of blood they had sucked from the seat of the disease. The process should be continued until they manifest the fullest symptoms of disgorging. Leeches that, had vomited the entire quantity of blood sucked as above, would briskly move about in quest of food if placed in water, while the contrary should be inferred from their lying dull and inert. These should be made to disgorge again. Leeches not made to emit the entire quantity of the sucked

* The leeches, though a blissful dispensation of Nature in themselves, instinctively draw off the vitiated blood from a diseased part, attacking the healthy vital fluid (red blood) when the former has been completely tapped or sucked.

blood stand in danger of being attacked with an incurable disease peculiar to their genus, and which is known as Indramada. The leeches should then be put into a new pitcher, and treated as before laid down, after they had fully emitted the sucked blood.

An ulcer incidental to an application of leeches should be rubbed with honey or washed with sprays of cold water, or bound up with an astringent (kasháya) sweet and cooling plaster, according to the quantity of blood removed from the part.*

Authoritative verse on the subject :—The physician who is fully conversant with the habitat, mode of catching, preservation and application of leeches, can well aspire to cure the diseases which yield to them or in which their use is indicated.

* In case of full and proper bleeding (Yoga) the ulcer should be rubbed with clarified butter technically known as the Shatadhautam (lit: hundred times washed) Ghritam (clarified butter), or a piece of cotton, soaked in the same substance, applied as a compress over the part. The ulcer should be rubbed with honey in a case of insufficient bleeding, while it should be washed with a copious quantity of cold water if excessive bleeding (Ati-Yoga) should set in. Similarly in a case marked by the absence of any bleeding at all (Mithyá-Yoga) a sour, sweet and cooling plaster should be applied over the ulcer.

Thus ends the thirteenth Chapter of the Sutrasthánam in the Sushruta Samhita which treats of Leeches and of how and which to use.

CHAPTER XIV.

Now we shall discuss the Chapter which treats of blood (**Shonita-Varnaniya-madhyayam**).

The food of a human being, which is usually composed of the five fundamental material principles, admits of being classified under four different heads [as, drinks and edibles, etc.]. It has six different tastes or is of two [cooling or heat-making] potencies, or consists of eightfold properties, [*viz.* hot, cool, dry, expansive, slimy, mild, sharp, etc.] and of a variety of other active or efficacious virtues. The food is fully digested with the help of the internal heat and ultimately assimilated in the system, giving rise to lymph chyle (Rasa) which is extremely thin or attenuated in its consistency and which forms the essence of the assimilated food.*

The lymph chyle (Rasa), though running through the whole organism, has its primary seat in the heart, whence it flows through the twenty-four vessels which branch off from the latter (heart) to the remotest parts and extremities of the body. Of the aforesaid twenty-four vessels, ten are up-coursing, ten are down-coursing, and four have a lateral direction. The Rasa or the

* It is free from all sorts of impurities such as fecal matter, etc., and permeates the minutest vessels and capillaries.

lymph chyle, thus flowing out of the heart, constantly soothes, maintains, and irrigates by transudation the body, and further contributes to its growth, and supports life owing to the dynamical effects of causes which lie beyond the ken of human understanding. The nature and course of this lymph chyle, which runs through the whole system, can be inferred from the growth, attenuation, or other modified conditions of the body.

Now it may be asked, whether the Rasa, which permeates the entire body and limbs, and which by flowing through different chambers (visceras) of the body is thus in constant contact with the excreta and other morbid humours, is of a cooling (Saumya) or heat-making (Ágneya) potency ?

The question may be answered by stating that, since the Rasa or lymph chyle is a fluid, and possessed of lubricating, vitalising, moistening, and nutritive (lit :— supporting) properties, it must be included within the class of Saumya (cooling) substances. The Rasa, though a Saumya fluid, obtains its characteristic pigment (Rágam) in its passage through the spleen and liver.

Authoritative verses on the subject:—The Rasa or the lymph chyle, coloured through the effect of the healthy normal dyeing heat of the body, obtains the name of blood. The Rasa is transformed into the catamenial flow in women which commences at the age of twelve and ceases at fifty.

Catamenial blood, though originating from Rasa which is of a cooling potency, is fiery or heat-making (Ágneya) in its character ; and the fecundated or impregnated ovum (Garbha) is both cooling and heat-making in its properties on account of its partaking of the nature of both the menstrual blood (ovum) and semen which are respectively possessed of the two preceding virtues. Hence several authorities hold the blood to be identical with the life blood or with the vital principle of a living organism, and being such, to be the product of the five fundamental material principles (Pánchabhautikam).

Metrical texts:—In blood the properties such as, a raw or fleshy smell, fluidity, redness, lightness and mobility, which respectively characterise the fundamental principles (of earth, water, fire, air, and sky) are to be found thus representing those specific elements in its composition.

The chyle produces blood. From blood is formed flesh. From flesh originates fat which gives rise to bones. From bones originate marrow, which, in its turn, germinates semen.

The Rasa which is originated from the digested or assimilated food and drink pre-eminently strengthens all the fundamental principles of the body.

The Purusha or self-conscious personality is Chyle-

born in its origin, and hence an intelligent person should carefully preserve his bodily Rasa (lymph chyle) by adopting a proper regimen of diet and conduct.

The term Rasa is derived from the root "Ras", to go, and the substance is so called from the fact of its continually flowing through and permeating every vital principle of an animated organism.

The Rasa is successively transformed into each of the six remaining fundamental principles of the body, and continues in the shape of each for the period of three thousand and fifteen kalás (five days according to our modern computation). Thus the Rasa is converted into semen, or into the menstrual blood (ovum) in women, in the course of a month.*

* The successive development of the fundamental or root principles of the body follows a distinct order. The essence of the assimilated food-matter under the heat of digestion goes towards the formation of chyle, and is ultimately transformed into it, its excreted and effete residue being passed out of the organism in the shape of stool, etc. The chyle thus produced is called the immature Rasa, or the Rasa in its nascent stage. Subsequently it enters into the bodily principle of Rasa, becomes matured by the native heat of the latter, and is resolved into three factors, or in other words, its excreted matter is transformed into phlegm, its thick or condensed portion is transformed into and assimilated in the matured Rasa of the body, whereas its subtile essence is metamorphosed into blood. The blood, thus newly generated, is merged into the fundamental organic principle of blood; and there by the heat of the latter it is again resolved into three factors, *viz.*, its excreted portion is transformed into bile, its thick or condensed portion is transformed or assimilated into the fundamental organic principle of blood, and its subtile essence is metamorphosed into flesh. The flesh, thus newly formed, is merged into the fundamental organic principle of flesh, and there, by the native heat of the latter, it is resolved into three

Authoritative verse on its computation:—In the present work, as well as in other works of recognised authority, a month is calculated to consist of eighteen thousand and ninety Kalás.

The said Rasa courses through the whole body in invisible currents of zigzag shape, like the waves of sound, or in (an upward direction) like flames of fire, or (in a downward direction) like rivulets of water.

factors, *viz*, its excreted portion goes towards the formation of such excreta as are found to be deposited in the corners of the eyes and inside the integuments of the prepuce, or about the region of the glans penis, its thick or condensed portion is transformed into the organic principle of flesh and its subtile essence is metamorphosed into fat. The fat, thus newly generated, enters into the organic principle of that name, and there, by the native heat of the latter, is resolved into three factors, *viz*, its excreted portion is discharged through the pores of the skin in drops of perspiration, its condensed portion is assimilated in the organic principle of fat, and its subtile portion is metamorphosed into bone. Again the bone, in its nascent stage, enters into the organic principle of bone, and there, by the inherent heat of that principle, is resolved into three factors, *viz*, its excreted portion goes towards the formation of hairs, mustaches, etc, its thick or condensed portion is assimilated into the organic principle of bone, and its subtile portion is metamorphosed into marrow. The marrow, in its nascent state. enters into the organic principle of that name; and there matured under the native heat of that principle, it is resolved into three factors, *viz*, its excreted portion contributes towards the formation of gelatinous matter deposited in the corners of the eyes, and the oily secretions of the skin, its condensed portion is assimilated into the organic principle of marrow, and its subtile portion is metamorphosed into semen. The semen again, in its nascent stage, enters into the organic principle of that name and there matured under its native heat is resolved into two factors, *viz*. thick and thin. The thick portion is assimilated into the organic principle of semen, the thin one being metamorphosed into (albumen). Semen, like gold a thousand times purified, casts off no dregs. Hence certain authorities hold albumen (protoplasmic matter) to be the eighth or the culminating principle of the body.

Now it may be asked, since the Rasa is naturally transformed into semen in the course of a month, what is the use of administering medicine which has a stimulating effect upon the organs of generation (Vájikaranam.) The answer is, that such medicines out of their own specific potencies and virtue help the speedy conversion of Rasa into semen and its profuse emission [on the desired occasion] like purgatives aiding the drastic evacuation of the bowels.

Again it may be asked, how is it, that semen is not found in an infant? Since perfume in a flower-bud is imperceptible to the organ of smell you may as well ask whether there is any perfume in it or not. But what does not exist in a thing can not be evoked in the subsequent course of its development. As the perfume in a flower-bud lies latent in its early stage of growth but becomes patent only with the growth of its seed organs, so semen or catamenial blood lies in a potential state in a male or a female child, and appears with the growth of beards and mustaches, or with the enlargement of the breasts, uterus and vaginal canal and the appearance of pubic hair.

The same Rasa, originated from the assimilated food, serves only to maintain the vitality in the old and spontaneously decayed subjects owing to an exhausted state of the inner vitalising principle, natural to old age.

The abovesaid principles (of Rasa, blood etc.) are called the root principles (Dhátus), inasmuch as they maintain the integrity of the human organism and guard against its speedy dissolution). And since the strength or weakness of the abovesaid bodily principles absolutely depends upon the richness or poverty of blood, we shall discourse on the latter condition of the blood.

The blood, vitiated by the deranged bodily wind (Váyu), becomes thin, frothy, transparent, quick-coursing, and expansive, assumes a vermilion or black hue, and is divested of its slimy character ; whereas vitiated through a deranged condition of the bile (Pittam), it assumes a blue, yellow, green, or brown colour, emits a fishy smell, becomes thin in its consistency and is shun by flies and ants. Similarly, blood, vitiated by the deranged phlegm (Kapham), becomes cold, glossy and thick, assumes a colour like that of the washings of Gairika or that of a flesh tendon, takes time in secreting or in running down, and is marked by an increase of its slimy character. The blood, vitiated through a concerted derangement of the three bodily humours, is marked by features peculiar to each of them, and assumes a colour like that of Kánjika (sour gruel), and emits a fetid smell. Similarly, the blood, vitiated through the joint action of any two of the (beforesaid) bodily humours, is characterised by features peculiar to each of them.

The blood in its healthy and natural state is possessed of a vivid red colour like that of an Indragopa (Cochineal) insect, and is neither too thin nor too transparent.*

Cases where blood-letting is prohibited :—A person afflicted with an œdematous swelling extending all over the body should be deemed unfit for bleeding. An intumescence occurring in a weak and enfeebled patient owing to an excessive use of acid food or in a person suffering from jaundice or laid up with hæmorrhoids or abdominal dropsy, as well as in an enceinte, or in a person suffering from Pulmonary consumption (Shosha), should not be bled.

Blood-letting, with the help of a surgical instrument, may be grouped under two distinct heads, according as scarification (Prachchhánam) or venesection (Sirá-Vyadhanam) is resorted to for the purpose. In such a case the knife or the instrument (Shastram) should be driven straight and speedily so as to make the incision straight, narrow, unextended, and of equal and slight depth throughout, (so as to reach only the surface layer of the flesh and blood), and not to injure in any way the local veins, nerves, joints, and other vital parts.

Bleeding performed on a cloudy day or done with a

* **Additional texts :**—Later on we shall have occasion to speak of the principles known as the life-blood (essential conditions of vitality—Sk. Jiva-Shonita) and of the process of blood-letting.

wrong incision, or with full exposure to cold and wind, or performed on a patient not previously diaphorised, or on a patient with an empty stomach, is attended with little or no outflow of blood owing to the thickened condition of the blood.

Authoritative verse on the subject:—Blood-letting surgically performed on a fatigued or exhausted subject, or on a person in a swoon, or anyway poisoned or intoxicated, or on a person suffering from extreme constipation of the bowels accompanied by suppression of the flatus (Váyu) and urine, or on a person of timid disposition, or on one overcome with sleep, is marked by the absence of any outflow of blood.

The vitiated blood, failing to find out an outlet, gives rise to itching, swelling, redness, burning, suppuration and pain in the part (to which it is confined). On the contrary, blood-letting performed on the body of a person excessively diaphorised or heated, or by an ignorant or inexperienced surgeon, or with an injudiciously deep incision, is attended with hæmorrhage, which may be followed by such dreadful results as Shirobhitápa or violent headache, blindness or loss of sight (Timria), Adhimantham (ophthalmia), loss of vital principles of the body (Dhatu-Kshaya), convulsions, paralysis (Ekánga Vikára), Hemiplegia (Pakshágháta), thirst, a burning sensation, hic-cough, cough, asthma, jaundice and even death.

Authoritative verses on the subject :—Therefore blood-letting should be performed on a patient not in an extremly hot or cold season, neither on one who is too much heated or improperly diaphorised (before the act). The patient should be given gruel (Yavágu) before the operation. A spontaneous cessation of red flow would indicate that there has been a free discharge of blood.

An act of complete and successful blood-letting is followed by a feeling of lightness and alleviation of pain in the affected part, by an abatement of the disease, and a general sense of cheerfulness.

A person, accustomed to blood letting, enjoys a kind of immunity from all types of skin diseases, sarcomata, aneurism, œdema, and diseases brought about by a vitiated condition of the blood such as, Ovarian tumour, Carbuncle, Erysipelas, etc.

A plaster composed of Elá, Shitashiva, Kustha, Tagara, Páthá, Agáradhuma, Bhadradáru, Vidanga, Chitraka, Trikatus, Ankura, Haridrá, Arka, and Naktamála, or three, or four, or as many of them as are available, pasted together and soaked in mustard oil saturated with common salt, should be rubbed over the mouth of the incision. By this means the blood will fully come out. In a case of excessive flow or hæmorrhage, the mouth of the incision should be gently rubbed with a composition consisting of the powders of Lodhra,

Priyangu, Madhuka, Pattanga, Gairika, Sarjarasa, Rásánjana, Shálmali flowers, Shankha, Shukti, Másha, Yava and Godhuma, and firmly pressed with the tips of the fingers. As an alternative, the mouth of the incision should be gently rubbed with the powdered barks of Sála, Sarja, Arjuna, Arimeda, Mesha-shringi, and Dhanvana, or the edges of the wound should be lightly dusted with the burnt ashes of a silk cord (a piece of silk rolled up in the form of a cord), and firmly pressed with the tips of the fingers ; or the mouth of the wound should be lightly touched with the powders of Lákshá and Samudra-phena, and its edges should be similarly pressed together as above. Then the wound should be firmly tied up (with a piece of silk or linen) plastered over with a paste of the substances mentioned in connection with the bandaging of ulcers (Vrana). The patient should be kept in a cool room, covered over with a wet sheet and constantly soothed with sprays of cold water. A medicinal plaster of a cooling virtue and a course of cooling diet should be prescribed for him. The wound should be cauterised with fire or an alkali, or the vein should be again opened at a point a little below the seat of the first incision in case where the abovesaid measures should have failed to check the flow of blood. The patient should be made to drink a decoction compound of drugs of the Kákolyádi group, sweetened with sugar or honey ; and his ordinary drink should consist of the

blood of the Ena or common deer, or of a sheep, hare, or buffalo. A diet composed of boiled rice, soaked in or saturated with clarified butter, should be prescribed, and the complications should be subdued according to the nature of the deranged bodily humours respectively involved therein.

Authoritative verses on the subject:—Excessive blood-letting is followed by impaired appetite and an agitated condition of the vital Váyu owing to the loss of the fundamental principles of the body, and, accordingly, to recoup the health of the the patient a course of diet should be prescribed which is light and not excessively heat-making, and which contains a fair amount of emollient and blood-making matter, and is marked by little or no acid taste.

The four measures indicated for the stoppage of bleeding are known ; as the Sandhánam (process by contracting the affected part), the Skandanam (thickening or congealing the local blood), the Páchanam (process of setting up suppuration in the wound) and the Dahanam (process of cauterisation).

Drugs of astringent tastes are possessed of the property of bringing about an adhesion (contraction) of the wound. Cooling measures such as, applications of ice etc, tend to thicken the local blood ; alkalis and alkaline preparations produce suppuration in such a

wound or ulcer, whereas cauterisation has the property of contracting a vein.

Remedies and appliances possessed of the virtue of bringing about an adhesion of such a wound should be used where applications for thickening or congealing the local blood would fail; whereas the suppurating measures should be adopted in the event of the former (Sandhánam) proving ineffectual. With any of the three of these preceding measures a physician should try to check the outflow of blood incidental to an operation of bleeding, and lastly the process of cauterisation should be resorted to in the event of the preceding ones having proved unavailing, as it is pre-eminently the best means of checking the bleeding.

The least residue of the vitiated blood continuing in the affected part may not aggravate the disease but prevent its perfect healing. In such a case bleeding should not be again resorted to, but the deranged residue should be subdued by means of pacifying or absorbing remedies.

Blood is the origin of the body. It is blood that maintains vitality. Blood is life. Hence it should be preserved with the greatest care.

The Váyu of a person who has been bled, and which has been aggravated by constant cold applications

may give rise to a swelling of the incised part characterised by a piercing pain, which should be treated with an unguent of tepid clarified butter.

Thus ends the fourteenth Chapter of the Sutrasthanám in the Sushruta Samhitá which treats of Blood.

CHAPTER XV.

Now we shall describe the Chapter which treats of development and non-development of the humoral constituents of the body and excrements **(Dosha-Dhátu-Mala-Kshaya-Vriddhi-Vijnaniya-madhyáyam).**

Since the human body is constituted of humours, (Doshas), excretions (Mala), and the fundamental principles (Dhatus) of blood, marrow, etc., hear me discourse on the features which are peculiar to each of them.

The Váyu.—The imparting of motion to the body (**Praspandanam**), the carrying of the sensations of the respective sense organs (**Udvahanam**), the passing down of food to its proper receptacles (**Puranam**), the separation of excretions from the assimilated food matter (**Viveka**), and the retention and evacuation of urine and semen, etc. (**Dharanam**) should be ascribed to the functions of the five kinds* of Váyu (nerve force) which support the body.

The Pittam.—Pigmentations or colouring (**Rágakrit**), the digestion of food and metabolism of tissues (**Paktikrit**), the vitalisation and nutrition of the protaplasmic cells (**Ojakrit**), the origination and preser-

* They are called Prána, Udána, Samána, Vyána and Apána.

vation of eye-sight **(Teja-Krit)**, the germination of heat and maintenance of the temperature of the body **(Ushmá-Krit)**, and the origination of the faculty of intellection **(Medhá-Krit)** should be regarded as the functions of the five kinds* of **Pittam**, which contribute to the preservation of the body through its thermogenetic potency (Agni-Karma).

The Shleshmá.—The function of the five kinds† of Shleshmá is to lubricate the interior of the joints **(Sandhi-Samshleshanam)**, to contribute to the gloss of the body **(Snehanam)**, to aid in the formation of healthy granules in sores **(Ropanam)**, to add to the size of the body **(Puranam)**, to build fresh tissues **(Vrimhanam)**, to impart a pleasant or soothing sensation to the body **(Tarpanam)**, to increase its strength **(Valakrit)**, and to give firmness to the limbs **(Sthairya-krit)**, thereby contributing to the welfare of the body by supplying it with its watery element.

The Rasa or the lymph chyle exercises a soothing effect upon the entire organism and tends

* They are named as Ranjaka, Páchaka, Sádhaka (Medhákrit and Ojakrit), A'lochaka and Bhrájaka.

† They are known as Shleshmaka, Kledaka, Vodhaka, Tarpaka, Avalamvaka.

N. B.—The **Váyu**, **Pittam**, and **Shleshmá**, **(Kaphham)**, though ordinarily translated as wind, bile and phlegm, differ in their meaning from their usual English synonyms. We reserve the treatment of these subjects for a separate place in another part of the book when we shall have occasion to deal with the essentials of Ayurvedic Physiology—**Tr.**

to contribute to the increased formation of blood. The blood, in its turn, increases the healthful glow of the complexion, leads to the increased formation of flesh and muscles and maintains vitality in the organism. The flesh contributes towards the stoutness or rotundity of the limbs and occasions the formation of fatty matter in the system. The fat gives rise to the glossiness (formation of oily or albuminous matter) of the body and primarily contributes towards the firmness and growth of the bones. The bones, in their turn, support the body, and contribute to the formation of marrow. The marrow contributes towards the formation and increase of semen, and fills in the internal cavities of the bones, and forms the chief source of strength, amorous feelings and hilarity. The semen gives rise to valour and courageousness, makes a man amorously disposed towards the female sex, increases his strength and amativeness, is the sole impregnating principle in the male organism, and is possessed of the virtue of being quickly emitted.

The excreta or the fecal matters of a man are indispensably necessary for the preservation of the body. They contain the wind and digestion (being primarily connected with the movements of the bodily Váyu and the feeling of hunger). The urine fills the receptacle of the bladder, and is possessed of the property of washing or draining off the waste or refuse matter of the organism ; whereas perspiration tends to moisten the skin.

The Ártavam (menstrual blood) is endued with the same properties as its arterial namesake, and is one of the essential factors in a woman which makes impregnation possible. The fœtus or impregnated matter (Garbha) serves to make patent the features characteristic of pregnancy. The breast-milk in its turn tends to bring about an expansion of the mammæ (of a woman), and maintains the life of her child (by supplying it with the necessary and nutritive element of food). These Váyu, etc. should be duly preserved in their normal condition.

Now we shall describe the symptoms which attend the loss or waste of any of the foregoing principles of the body.*

The loss of the bodily Váyu (nerve-force) is followed by a state of languor, shortness of speech, uneasiness or absence of hilarity, and loss of consciousness. The loss of (Pittam) is marked by a dulness of complexion, diminution of the bodily heat and an impaired state of internal fire (digestive heat). The loss of phlegm (Kapham) is marked by dryness, a sensation of internal burning, a feeling of emptiness in the stomach and other

* Such a loss or perceptible deterioration of any of them should be ascribed to the use of excessive cleansing or cathartic (Samshodhanam) and pacifying (Samshamanam) measures, or to a repression of the natural urgings of the body, or to a course of violent or overfatiguing physical exercise, or to amorous excesses, or to the use of unwholesome and unsuitable food, or to grief, etc.

cavities or chambers of the body, looseness of the joints (a feeling as if the joints were all broken), thirst, weakness, and insomnia. In such cases the medical treatment should consist of remedial agents which are capable of directly contributing to the growth or formation of the humour so lost or deteriorated.

Similarly the **loss of lymph chyle** is marked by pain about the region of the heart, Angina Pectoris, with palpitation of the heart, a sensation of emptiness or gone-feeling in the viscus, and thirst. The **loss of blood** is attended with such symptoms as roughness of the skin, and a craving for acid food or drink. The patient longs to be in a cool place and asks for cool things, and the veins become loose and flabby. The **loss of flesh** is marked by emaciation of the buttocks, cheeks, lips, thighs, breasts, armpits,* neck, and the calves of the legs. The arteries seem loose and flabby, and the body seems to be dry and inert, accompanied by an aching or gnawing pain in its members. The **loss of fat** is followed by such symptoms as the enlargement of the spleen, a sense of emptiness in the joints, and a peculiar dryness of the skin and a craving for cold and emollient meat. The **degeneration of the bones** is marked by an aching pain in the bones and bone-joints, a wasting of teeth and gums, and a general dryness of the body. Similarly,

* The armpits look thin, narrow and contracted.

the **loss or waste of marrow** is characterised by the formation of a lesser quantity of semen, aching pain in the bones and breaking pain in the bone-joints which have become marrowless. The **loss or waste of semen** is marked by pain in the penis and the testes, and by incapacity for sexual intercourse. In such cases the emission of semen but rarely happens, and is then perceptibly deficient in its quantity, the emitted matter consisting of a small quantity of semen marked with shreds of blood. The medical treatment under the preceding circumstances should consist of remedies of such medicinal virtues as are found to directly and immediately contribute to the formation of the bodily principle (thus wasted or lost).

The **loss absence, suppression** or **scanty formation** of fecal matter is attended with a sensation of pain at the sides and the region of the heart, and the upward coursing of (the incarcerated) wind or flatus, accompanied with a rumbling sound about the region of the liver and the intestines. Similarly, the **loss, (absence or scanty formation)** of urine is marked by an aching pain in the bladder, causing it dribble or to come out in thin and scanty jets. Here, as in the foregoing instances, the remedial agents should consist of drugs which directly contribute to the formation of urine. Similarly the **waste, absence or scanty formation** of perspiration is followed by such symptoms as numbness about the pores of the hair, and

dryness of the epidermis (skin). The sense of touch is perceptibly affected, and perspiration is entirely stopped. The medical treatment in such a case consists in the application of medicated unguents, lubrications, diaphoretics, and adoption of measures (that tend to produce a copious perspiration).

In the case of loss or waste of the catamenial flow, the menses do not appear at the appointed time or are scanty. The vagina seems stuffed and painful. The medical treatment in such cases consists in the adoption of alterative or cleansing measures, and in the administration of drugs of a heat-making (Ágneya) potency or virtue.

The **loss** or **waste** of breast-milk is characterised by a shrunken condition of the mammæ, and suppression or scanty secretion of the fluid. The medical treatment in such cases lies in the administration of drugs which generate Kapham.

The atrophy or wasting of the fœtus in the womb (during the period of gestation) is marked by the absence of any movement in the uterus and the non-distended condition of the sides or walls of the abdomen. The treatment consists in the application of Kshira Vastis (enemas of medicated milk into the region of the uterus) in the eighth month of gestation, and prescribing courses of emollient fare for the patient (mother)*

* Several editions read invigorating diets, egg, etc.

Now we shall describe the symptoms which mark the excess (excessive accumulation in the body) of any of the fundamental humours, principles and excrements of the body.

The quantities of these humours, principles and secretion, are abnormally increased through the use of substances that primarily contribute to their formation in the organism.*

An **excess of Váyu** in the body is marked by such symptoms as roughness of the skin, † emaciation of the body, darkness of complexion (lit : blackness of hue), a little tremor or trembling of the limbs, longing for heat, or for hot things, insomnia, thickness or increased consistency of the fecal matter and decrease of bodily strength. (Similarly, an abnormal) **increase of Pittam** is characterised by a sallow complexion or a yellowish colour of the skin, a general burning sensation in the body as well as insomnia, a craving for cold contacts and cooling things, diminution of strength, weakness of the sense organs, fits of fainting and yellowness of the conjunctivæ, stool and urine.

An **excess of Kapham** in the body is marked by such symptoms, as the whiteness, coldness and numbness of the body, heaviness of the limbs, a

* Several Editions read it as an additional text.

† Several Editions read roughness of speech.

sense of drowsiness and languor, somnolence, and a feeling of looseness of the bone-joints.

Similarly, an **increased germination** of **lymph chyle** (Rasa) in the body is manifest by such characteristics as, nausea, water-brash, and an increased flow of salivary secretion. **A plethora of blood in the system** gives a reddish glow to the complexion and the white of the eyes, and imparts fullness to the veins. An **increase of flesh** is marked by the rotundity and fullness of the buttocks and the lips, as well as of the penis, arms, and the thighs, and an increased heaviness of the whole body. **An excess of fat** in the body imparts an oily gloss to the skin. The sides of the abdomen are increased in bulk, and the body emits a fetid smell, and the person is assailed with cough and dyspnœa. An **excessive formation of bone** (abnormal ossification) is attended with such symptoms as the cutting of additional teeth and the abnormal development of any of the bone-structures. An excessive **formation of marrow** gives rise to a heaviness of the eyes and to the members of the body.

An excess of semen in the body is marked by an excessive flow of that fluid and gives rise to the formation of gravels (concretions) in the bladder which are known as Shukráshmari. An **abnormal increase in the formation** of fecal matter is attended with distension of the abdomen and colic pains in the loins and the intestines. An **excessive formation of urine** is manifest by constant

urging for micturition and distension of the bladder, attended by a kind of gnawing or aching pain.

Similarly, an increased secretion of perspiration is attended with an itching of the skin which emits a bad odour. An **excess in the quantity of** catamenial blood* gives rise to an aching of the limbs and an excessive flow. So also an **excess in the quantity of the breast-milk** is attended with frequent secretions of that fluid, and with inflammation and pain in the mammæ. An **excessive growth of the fætus** in the uterus tends to abnormally swell the region of the abdomen, and is accompanied by anasarca, or dropsy, of the lower extremities (phlegmasia dolens).

These abnormal excesses of the aforesaid humours and principles, etc. of the body should be checked or remedied with corrective (cleansing) or pacifying measures as would be indicated by their respective natures, so as not to reduce them to a smaller quantity than that in which they are found in the normal and healthy state of a body.

Metrical text:—An increased quantity of a bodily principle gives rise to a similar increase in the quantity of one immediately succeeding it in the order of enumeration as stated above; aud hence an

* An abnormal flow tends to stimulate the voluptuous sensation of a woman to a considerable extent, and is followed by a sense of reactionary weakness. It emits a fetid smell and originates ovarian tumours.

increase in any of the fundamental principles of the body should be checked and reduced to its normal quantity.

Now we shall describe the characteristic features of the strength-giving principles of the body, as well as the symptoms that mark their loss or waste. The quintessence of all the fundamental principles of the body, starting with lymph chyle and ending with semen, is called the **Ojas**, which is identical with what is termed "**vital power.**" This view of oneness of vitality with protoplasmic albumen has been adopted in the present work*

This **Ojas** (albumen) or strength-giving principle serves to impart a firm integrity to the flesh (and the muscles), exercises unbounded control over all acts of vitality, improves the voice and complexion, and helps both the external (operative) and the internal (intellectual) sense organs, in duly performing their natural functions.

Authoritative verses on the subject:—**Ojas** (albumen) being of a white colour belongs to the class of Somátmakam (cooling) substances.

* The Sanskrit term "**Ojas**" has a variety of meanings. Primarily it means protoplasmic matter as found in cells (Vindus). Secondarily it means albumen as we shall describe later on in the chapters on etiology and therapeutics of Prameha. Several authorities hold a contrary view stating that **Ojas** (albumen) forms only one of the essentials of vitality and that the two are by no means identical.

It is cooling, oleaginous, and firm (Sthira), contributes to the formation and growth of flesh, maintains its integrity or holds it firm, and is mobile or capable of moving about from one place to another within the organism. * It is further soft and shiny, and is possessed of the most efficacious virtue and should be regarded as the most important element (seat) of vitality. The whole body with its limbs and members is permeated with **Ojas,** and a loss or diminution in its natural quantity leads to the gradual emaciation (and ultimate dissolution) of organism.

A blow, a persistent wasting disease, anger, grief, cares and anxieties, fatigue and hunger, are the causes to which should be ascribed the wasting or disappearance of this strength-giving principle (albumen) of the body. The bodily albumen, through the agency of the above-said causes, is wasted through the channels carrying the different fundamental principles of the body. Albumen is transformed into strength which radiates from the heart.

A deranged or vitiated **albumen** (Ojas) is characterised firstly by its dislodgment from its proper seat or locality (Visransha), secondly, by a change or modification of its native virtues in contact with the deranged humours or disordered organs (Vyápad) and thirdly, by wasting away (Kshaya).

* Several editions read Rasam, meaning it to be possessed of a sweet taste.

The first of the preceding properties (dislodgment) gives rise to such symptoms as looseness of the bone-joints, numbness of the limbs, dislodgment of the deranged humours from their respective receptacles and suppression of the (bodily and intellectual) functions. To the second of the foregoing properties, (change or modification of its natural virtue through contact with the deranged bodily humours etc.) should be ascribed such symptoms, as numbness and heaviness of the limbs, dropsy due to the action of the deranged bodily Váyu, discoloured or changed complexion, feeling of malaise, drowsiness and somnolence. The third property of the deranged albumen, (loss or wasting), brings on fits of fainting, loss of flesh, stupor, delirium and ultimately death.

Authoritative verses on the subject:—A deranged state of albumen is marked by the three abovesaid properties of dislodgment from its proper seat (Visransha); by a change of its natural virtues through contamination (Vyápad) and by wasting (Kshaya). The first of these properties (Visransha) is characterised by looseness of the joints, by an inert state of the body, by a sense of fatigue, by a dislodgment of the deranged humours from their natural seats, and by a suppression of the bodily and intellectual functions. Numbness and heaviness of the limbs, malaise, a discoloured complexion, drowsiness,

somnolence and dropsical swelling brought about by a deranged state of the bodily Váyu, should be considered as natural consequences of the Vyápad (change of the natural virtues of albumen through contamination). The loss or waste of **Ojah** (albumen) is marked by such symptoms as fits of fainting, emaciation of the body, bewilderment and distraction of the mind, delirium and loss of consciousness and ultimately death.

The medical treatment in cases of dislodgment or flowing out external secretion) of albumen from its natural seat (Visransha), as well as in the event of it becoming contaminated by the vitiated principles of the body, should consist in improving its quantity by elixirs and remedies possessed of rejuvenating properties, tending to increase the quantity of such fluid (albumen) in the body. A patient who has lost all consciousness owing to an excessive loss or waste of albumen) should be given up by a physician (as incurable).

The oily or albuminous matter found within the components of the other fundamental principles (Dhátu) of the body as metabolised by the internal heat and regularly metamorphosed into the succeeding ones) should be grouped under the head of fiery or thermogenetic (Ágneya) substances. This fatty matter (Vasá) predominates in the female organism and produces its peculiar softness,

beauty and pleasing shape, causes the growth of scanty but soft hair on its surface. It strengthens the eyesight and increases the energy of the body, improves its power of digestion and heightens its glow and complexion. Fat is deranged by such acts as, an abuse of astringent, bitter, cold, parchifying or Vistambhi (indigestible food which remains stuffed in the stomach) substances, a voluntary repression of the natural urging for evacutions of the body, by excessive sexual indulgence, and fatiguing physical exercise, or by the draining action of any particular disease.

An instance of dislodgment of fat from its proper seat or locality is attended by such symptoms as roughness of the skin, loss of the natural healthful glow of the body and a breaking or an aching pain in the limbs. Anæmia or a gradual emaciation of the body, impaired digestive function and a slanting or downward course of the deranged humours, mark the case where the bodily fat has undergone a change in its natural properties through any foul contamination. A case of loss or waste of the bodily fat is marked by such symptoms as, impaired digestive function, dulness of sight, decay of strength and aggravation of the bodily Váyu, and always ends in death.

The medical treatment in the latter case (loss of fat) should consist in the administration of oily or emollient drinks, use of medicated unguents or lubrications, Pradeha (plasters of oleaginous substances) and

Parisheka (washes) and a diet comprising light, cooling and well-cooked articles of food.

Metrical texts :—A person suffering from a wasting of any of the constituent humours or fundamental principles or excrements of the body, as well as one suffering from loss of Ojah (albumen) naturally craves for drink and food that tend to contribute directly to the formation of the matter (or bodily principle) so lost or wasted. Conversely, the particular food or drink longed for by a person suffering from a loss or waste of any of the abovesaid fluids or principles, should be looked upon as possessed of a curative virtue in that particular case. Such a person devoid of consciousness and divested of his bodily and intellectual functions through a deranged state of the bodily Váyu nerve-force) and extremely weak and enfeebled owing to the loss of the vital fluid should be regarded as past all cure.

Etiology of Obesity :—Obesity or loss of flesh (Kársha) should be ascribed to changes in the condition of the lymph chyle. The lymph chyle derived from the assimilated food of a person, who is habituated to a course of diet which tends to promote the quantity of the bodily Kapham or is in the habit of pampering his belly even when a previous meal has not been thoroughly digested, or who is addicted to a habit of sleeping in the day, or leading a sedentary life, or is averse to taking

any sort of physical exercise, continues in an immature state and is transformed into a serum of sweet taste which moves about within the body, engendering the formation of fat which produces excessive stoutness. A person afflicted with obesity develops such symptoms as shortness of breath, thirst, ravenous appetite, excessive sleepiness, perspiration, fetid odours in the body, wheezing sound in the throat during sleep or sudden suspension of breath, inert feeling in the limbs, dulness or heaviness of the body, and indistinctness of speech. Owing to the softness of fat, a fatty person is unfitted for every kind of work. Capacity for sexual intercourse is diminished (in such a one), owing to the obstruction of the passage of semen by phlegm and fatty deposits; and the growth of the rest of the root-principles of the body such as, lymph chyle, albumen, semen, etc., is considerably arrested owing to the deposit of fatty matter within the channels of the internal passages of the body, thus seriously affecting his bodily strength. An obese or excessively corpulent person is likely to be afflicted with any of the following diseases such as, urethral discharges, eruptions, boils, carbuncles, fever, fistula in ano, or with any of the diseases which are caused by a deranged state of the bodily Váyu; and such attacks are invariably found to terminate in death. Any disease in such a person is apt to develop into one of a violent and dangerous type owing to the obstruction of the internal channels with deposits of fat.

Hence all things or conditions which foster the growth of abnormal fat should be carefully avoided.

Accordingly medicated compositions, consisting of such drugs and substances as Shilájatu, Guggulu, Go-Mutram, Triphalá, Loharaja, Rasánjanam, Madhu, Yava, Mudga, Koradusha, Shyámaka and Uddálaka which are anti-fat in their properties, or of remedial agents possessing the efficacy of cleansing the internal channels, as well as enematas of liquefacient solutions technically known as Lekhana Vastis and physical exercise should be prescribed.

Etiology of Ka'rshyam :—Loss of flesh or a gradual emaciation of the body should be ascribed to the partaking of food in the composition of which, matter which aggravates the bodily Váyu largely or excessively enters, to over-fatiguing physical exercise, sexual excesses, over study, fright, grief or anxiety, to the keeping up of late hours, to unsatisfied hunger, insufficient food, and to astringent food which tends to dry up the lymph chyle. The chyle, thus parched up, moves about in the organism, but fails to impart to it the necessary nutritive element owing to its being insufficiently charged with it, thus causing the body to grow extremely emaciated.

A patient suffering from extreme emaciation of the body fails to bear the inclemencies of weather and the variations of terrestrial heat, and becomes apathetic to all movements and does but imperfectly perform the

functions of vitality, and is also incapable of enduring thirst or hunger. The bodily strength suffers a gradual diminution, and diseases, incidental to a deranged state of the bodily Váyu, make their appearance, and the patient has to meet his doom from any of the following diseases as asthma, cough, Shosha (phthisis), enlarged spleen or liver, abdominal dropsy, dyspepsia, abdominal glands and hæmoptysis. Any disease appearing in such a patient develops into one of a violent type owing to the loss or diminished condition of the bodily strength or protoplasm (Prána).

Contrarily, conditions or factors which produce obesity should be avoided. A case of patent obesity should be checked with a medicated compound, consisting of such drugs as, Payasyá, Ashvagandhá, Vidári, Vidárigandhá, Shatávari, Valá, Ativalá, Nágavalá and such other drugs of sweet taste. Diets consisting of thickened milk, clarified butter, curd, meat, boiled Shali rice, Yasthika, wheat, barley, etc., should be prescribed in the case ; and sleep in the day, sexual indulgence, physical exercise, etc., should be prohibited. Enematas of nutritive substances can be likewise given with advantage.

On the other hand, the lymph chyle of a man, who partakes of food belonging to both the abovesaid classes, courses through his organism and strengthens the root-principles of his body, thus giving a middling or healthful rotundity to his limbs owing to its properties being

equipoised. A man possessed of such a body is capable of all kinds of work and movement. He can fairly stand the inclemencies of weather and the keenness of hunger and thirst, and will gain in strength and energy. Care should be always taken to have such a well equipped body of moderate size.

Authoritative verses on the subject :—Excessively corpulent and excessively lean persons are alike condemnable. A body which is neither too stout nor too lean, but strikes the mean as regards plumpness, is the best. A lean frame should have the preference to a stout one. The enraged or aggravated bodily humours dry up the fundamental principles of the body, such as the lymph chyle etc., just in the same way as a well-kindled fire will evaporate the water contained in a basin placed over it. Since (the temperament, constitution, size and the fundamental principles of) the body vary in different individuals; (and since the body, in its turn, undergoes such gradual transformations as infancy, youth and old age), and changes its state each moment, it is absolutely impossible to lay down the exact quantity of the deranged humours, excrements and fundamental principles (of lymph chyle, blood, semen, albumen, etc.) that may be found in the human organism. Hence it is necessary for a physician to ascertain their state of equilibrium (their continuance in normal state and

quantity) at any particular time ; and which should be pronounced only in cases where signs of perfect health would be visible. An experienced physician would naturally draw a contrary inference from the improper functions of the organs in an individual. A person with an uniformly healthy digestion, and whose bodily humours are in a state of equilibrium, and in whom the fundamental vital fluids course in their normal state and quantity, accompanied by the normal processes of secretion, organic function, and intellection, is said to be a healthy person.

An intelligent physician should preserve the state of health in a healthy individual, while he should increase or decrease the quantity of the bodily humours, vital fluids, or excrements in a sick patient according to the exigencies of the case until his health is perfectly restored.

Thus ends the fifteenth Chapter of the Sutrasthánam in the Sushruta Samhitá which treats of the Development and Non-development of the humoral constituents of the body.

CHAPTER XVI.

Now we shall discuss the Chapter which treats of the piercing and bandaging of the lobules of ears **(Karna-Vyadha-Vandha-Vidhimadhyaym).**

The lobules of the ears of an infant are usually pierced through for protecting it (from the evil influences of malignant stars and spirits) and for the purposes of ornamentation as well. The piercing should be performed on a day of bright fortnight marked by the auspicious lunar and astral combinations, and in the sixth or the seventh month of the year reckoned from its beginning (Bhádra). The child should be placed on the lap of its nurse, and benedictions should be pronounced over it. Then having soothed it and lured it with toys and playthings, the physician should draw down with his left hand the lobules of its ears with a view to detect, with the help of the reflected sun-light, (the closed up) apertures that are naturally found to exist in those localities. Then he should pierce them straight through with a needle held in his right hand, or with an awl (Ará), or with a thick needle where the appendages would be found to be too thick. The lobule of the right ear should be first pierced and then the left in the case of a male child, while the contrary should be the procedure in the case of a female. Plugs of cotton-lint should be then inserted into the holes of the pricked ear-lobules, which

should be lubricated or rubbed with any unboiled oil. A copious bleeding attended with pain would indicate that the needle has passed through a place other than the natural (and closed up) fissure described above; whereas the absence of any serious after-effect would give rise to the presumption that the piercing has been done through the right spot. Any of the local veins incidentally injured by an ignorant, bungling surgeon, may be attended with symptoms which will be described under the heads of Káliká, Marmariká, and **Lohitiká**.

Káliká is marked by fever and a burning pain in the affected part and swelling. **Marmariká** gives rise to pain and knotty (nodular) formations about the affected region, accompanied by (the characteristic inflammatory) fever; while in the last named type (**Lohitiká**) symptoms such as, Manyá-Stambha (numbness of the tendons forming the nape of the neck), Apatának (a type of tetanus), Shirograha (headache) and Karna-shula (ear-ache) exhibit themselves, and they should be duly treated with medicinal remedies laid down under their respective heads. The lint should be speedily taken out from a pierced hole which is marked by extreme pain and swelling, etc., on account of its being made with a blunt, crooked or stunted needle, or owing to its being plugged with a deep and inordinately large lint, or to its being disturbed by the aggravated bodily humours (Doshas), or to its being made

at a wrong place. An unguent composed of Madhuka, Eranda roots, Manjisthá, Yava, Tila, honey and clarified butter pasted together, should be thickly plastered over the affected part until the ulcers are perfectly healed ; after which the lobules of the ears should be again pierced through according to the directions laid down before.

The lint should be removed, each third day, and a thicker one should be inserted in its stead on each successive occasion, and the part should be rubbed with (unboiled oil) as before. For the expansion of the fissures, (sticks of Nimba or Apamárga, or rods of lead) should be inserted into them after the subsidence of the accompanying symptoms and deranged bodily humours (in the locality).

Metrical Text :—The fissures thus expanded may ultimately bifurcate the lobules of the ears owing to the effects of the deranged bodily humours (Dosha), or of a blow. Now hear me discourse on the mode of adhesioning them (with suitable bandages).

These unions or adhesions admit of being briefly divided into fifteen different kinds, *viz.*, the Nemi-sandhánaka, the Utpala-Bhedyaka the Valluraka, the Ásangima, the Ganda-karna, the Áháryaya, the Nirvedhima, the Vyáyojima, the Kapáta-sandhika, the Ardha-kapáta-sandhika, the Samkshipta, the Hina-karna, the Vallikarna, the Yasthi-karna, and the Kákaushthaka.

Out of these, the process, known as the **Nemi-sandhánaka**, should be used in cases where each of the bifurcated lobes of the ears would be found to be thick, extended, and equal in size. The process, known as the **Utpala-Bhedyaka**, should be used in cases where the severed lobes of the ears would be found to be round, extended, and equal in dimensions. The process, **Valluraka** should be resorted to in cases where the severed lobes of the ears would be found to be short, circular and equal in size. The process, known as the **Ásangima**, should be adopted in cases where the anterior surface of one of these severed appendages would have a more elongated shape than the other. The process, known as the **Ganda-Karna**, consists in slicing off a patch of healthy flesh from one of the regions of the cheeks and in adhering it to one of the severed lobes of the ears which is more elongated on its anterior side than the other (Plastic-operations). In the case of extremely short lobes, the flesh should be cut off from both the cheeks and adhered to them, the process being known as the **Áháryaya**. The lobes of the ears which have been completely severed from their roots are called Pithopamas. The process known as the **Nirvedhima** should be resorted to in such cases by piercing the two Putrikás (Tragus and Anti-tragus) of the ears.

The process known as the **Vyáyojima** should be made use of in cases where one of the bifurcated

lobes of the ear should be found to be dissimilar to the other as regards its thickness or thinness. The process known as **Kapáta-Sandhika** consists in bringing about an adhesion, on the posterior side, between one of the bifurcated lobes and another, which is elongated on the anterior side of the ear. The adhesion is so called from the fact of its resembling the closing of the two leaves of a door (Kapátam). The process known as the **Ardha-Kapáta-Sandhika** consists in bringing about an adhesion on the anterior side between the shorter one of the two parts of a bifurcated ear-lobe with the part, elongated on the posterior side, like a half-closed door.

The ten aforesaid processes of adhesion may be successfully brought about and their shapes can be easily pictured from the meanings of their respective names.

The remaining five sorts such as the **Samkhiptam** etc., are seldom attended with success and hence are called impracticable (Asádhayas). The process **Samkhiptam** has its scope in the case where the auricle (Shashkuli) has been withered up and one of the bifurcated lobes is raised, the other being reduced and shortened. The process of **Hina-karna** should be adopted in cases where the supporting rim of the lobe (pinna) has been entirely swept away and its exterior sides and the cheeks are sunk and devoid of flesh. Similarly the adhesive

process known as the **Vallikarna** is indicated in cases where the lobes are short, thin and unequal. The adhesion known as the **Yasthi Karna** is indicated in cases where the thin and severed ear-lobes are run across with veins and made of knotty or nodular flesh. The case in which the ear-lobe, being permeated with a little quantity of blood, is fleshless and ends in a narrow tip or end, furnishes the occasion for **Kákusthakapáli.**

The five abovesaid adhesions, if followed by swelling, inflammation, suppuration and redness of the affected part and found to be secreting a sort of slimy pus or studded over with pustular eruptions, may be apprehended as not to be attended with success.

Authoritative verses on the subject :—The exact middle point of the external ear should be pierced (with a knife) and the severed parts should be pulled down and elongated in the case where both the parts of a bifurcated ear-lobe would be found to have been entirely lost or eaten away. In the case where the posterior one of the two bifurcated parts would be found to be longer or more elongated, the adhesion should be effected on the anterior side ; whereas the contrary should be the case where the anterior one would appear to be more elongated. Only the remaining one of the two bifurcated parts of an ear-lobe would be pierced, cut in two and adhesioned on the top,

in the case where the other part would be found to be gone. A surgeon well-versed in the knowledge of surgery (Shástras) should slice off a patch of living flesh from the cheek of a person devoid of ear-lobes in a manner so as to have one of its ends attached to its former seat (cheek). Then the part, where the artificial ear-lobe is to be made, should be slightly scarified (with a knife), and the living flesh, full of blood and sliced off as previously directed, should be adhesioned to it (so as to resemble a natural ear-lobe in shape).

A surgeon, wishing to effect any sort of adhesion other than those described before, should first collect the articles enumerated in the chapter on Preliminary Measures to Surgical Operations, together with milk, water, Dhányámla (fermented rice boilings), Surámanda (transparent surface-part of wine) and powders of earthen vessel. Then the hair of the patient, whether male or female, should be gathered and tied up in a knot, and the patient should be given a light food (so as to keep up his strength without hampering his digestion) ; after which his friends and relations should be asked to hold him firm. Then having ascertained the particular nature of adhesion to be effected in the case, the surgeon should examine the local blood by incising, excising, scarifying or puncturing the affected lobes as found necessary, and determine whether the same is pure or vitiated. Then having

washed the blood with Dhányámla and tepid water, if found vitiated through the action of the deranged (Váyu), or with milk and cold water in the event of the same being contaminated by the deranged Pittam, or with Surámanda and warm water in the case of its being vitiated by the action of the disordered Kapham, the surgeon shall bring about the adhesion by again scarifying the affected parts of the ear, so as not to leave the adhesioned parts elevated (raised), unequal and short. Of course the adhesion should be effected with the blood being still left in the parts that had been scraped. Then having anointed them with honey and clarified butter, they should be covered with cotton and linen, and tied with strings of thread, neither too loose nor too tight, and dusted over with powders of baked clay. Then directions should be given as regards the diet and nursing of the patient, who may be as well treated with the regimen laid down in the chapter on **Dvi-vraniyam.**

Authoritative verses on the subject :—The patient should be careful not to disturb the bandage and avoid physical exercise, over-eating, sexual intercourse, exposure to, or basking in, the glare of fire, fatiguing talk, and sleep by day. For three consecutive days the ulcer should be anointed with unboiled oil ; and cotton soaked in the same substance should be placed over it, which is to be altered, each third day, till healing.

The incidental ulcer should not be tried to be healed up as long as the local blood (blood in the ulcer) is not fully purified ; or so long as there is hæmorrhage from the seat of the affection or the local blood continues feeble. An ulcer, adhesioned with the least of the Vayu-vitiated blood continuing in its inside, will spontaneously burst or break open afresh. It will be again attended with pain, burning, redness and suppuration in the event of its being closed with a little quantity of Pitta-deranged blood incarcerated in its inside. Adhesioned even with a little quantity of Kapha fouled blood in its cavity an ulcer is marked by itching and numbness. An ulcer adhesioned with the continuance of an active hæmorrhage from its inside is marked by a brown or blackish yellow swelling. An ulcer, adhesioned at a time when the local blood, though otherwise good or pure, has been thinned or weakened through excessive bleeding, is followed by a corresponding emaciation (thinness) of the adhesioned part. The lobule of the ear thus adhesioned should be gradually pulled down and elongated after the complete healing of the local ulcer and the subsidence of its concomitant symptoms, and after the cicatrix has assumed the colour of the skin of the surrounding part. Otherwise the adhesioned part may be characterised by pain, swelling, inflammation, burning and suppuration, or the adhesion may again fall off. An adhesioned ear-lobe, un-

accompanied by any of the distressing or unfavourable symptoms, should be gradually elongated by rubbing it with an unguent composed of the milk, fat, and marrow of any such animals and birds as the Godhá, the Pratudas, the Vishkiras, the Ánupas, or the Audakas as would be available, and clarified butter and the oil expressed out of the seeds of white mustard, boiled with the decoction or Kvátha of Arka, Alarka, Valá, Ativalá, Anantá, Apamárga, Ashvagandhá, Vidarigandhá, Kshira-Shukla, Jalashuka and the drugs forming the group known as the Madhura, which should be previously prepared and carefully stowed in a covered receptacle.

Metrical texts :—Then the above medicinal unguent should be applied or rubbed over the lobe of the affected ear, whereby all the disturbing or unfavourable symptoms would be subsided, thus favouring its firm and steady growth. Similarly a plaster composed of Yava, Ashvagandhá, Yashtyáhva, and Tila, pasted together might be rubbed over the affected ear-lobe with advantage. Oil prepared and boiled with the essence of Shatávari, and Ashvagandhá, or Payasyá, Eranda, Jivana and milk increases the growth of an ear-lobe. The lobe of an ear, which refuses to grow in size in spite of being fomented and lubricated as above indicated, should be scarified with slight longitudinal incisions on its anterior side (that is on the side nearest to the cheeks)

and not on the posterior one, as such a procedure might be attended with dreadful results.

An ear-lobe should not be tried to be elongated just after the adhesion of its two severed parts, inasmuch as the centre of the adhesion, still being raw, might cause them to fall off again. Thus an ear-lobe under the circumstance should be gradually elongated, only when it would be found to be marked by the growth of hair on its surface, and the hole or the perforation has assumed a circular look, and the adhesion has become firmly effected, well-dried, painless, even and level in its entire length.

The modes of bringing about an adhesion of the two severed parts of an ear-lobe are innumerable; and a skilled and experienced surgeon should determine the shape and nature of each according to the exigencies of a particular case.*

* **Additional Text** :—O Sushruta, again I shall deal with diseases which affect the lobule of an ear under the circumstance described above The deranged bodily Váyu, Pittam and Kapham, either jointly or severally, give rise to several types of diseases which affect the lobule of an ear. The deranged Váyu produces numbness and an erysipelatous swelling and ulcer about the affected ear-lobe, while an erysipelatous ulcer in the locality accompanied by swelling, burning, suppuration, etc., should be ascribed to the action of the deranged Pittaṁ. Heaviness, numbness and swelling of the ear-lobe accompanied by constant itching in the affected locality mark the action of the deranged Kapham. The medical treatment in these cases consists in effecting a subsidence of the particular deranged humour by means of diaphoresis, lubrication, Parishekas (medicated plasters) or blood-letting as the case may be. These measures should be moderately applied and a nutritive and invigorating food should be pres-

Rhinoplastic operations :—Now I shall deal with the process of affixing an artificial nose.

cribed for the patient. The physician who is well familiar with the actions of the deranged bodily humours as described above, should be looked upon as alone entitled to take in hand a case, which falls under the head of one of the preceding types.

Now I shall enumerate the names of the several diseases which affect a severed lobe of the ear and describe the symptoms which each of them develops in succession. They are known as Utpátaka, Utputuka, Shyáva, Bhrisam-kandujáta, Avamantha, Sakanduka, Akundaka, Granthika, Jámvala, Srávi and Dáhavána. Now hear me discourse on the nature of medicinal treatment to be adopted in each of them.

Remedies :—A plaster composed of the drugs known as Apámárga, Sarjarasa, Patala bark and Lakucha bark pasted togather, or a medicated oil prepared and boiled with the preceding substances should be applied in a case of the Utpátaka type, wherea a case of the Utputuka type would prove amenable to a medicinal plaster consisting of Shampáka, Shigru, Putika, the fat and marrow of a Godhá and the milk and bile of a she-deer, she-buffalo or sow, pasted together ; or to a medicated unguent composed of the abovesaid substanees duly boiled with oil. Similarly, a medicinal plaster composed of the drugs known as Gauri, Sugandhá, Shyámá, Anantá, Tanduliyakam, or an oil prepared and boiled with the extract of the preceding drugs, would prove beneficial in a case of the Shyáva type of the desease. In a case of the Vrisham-Sakundakam type, the affected part should be rubbed or lubricated with an unguent or medicated oil prepared with the boiled extract of Páthá, Rasánjanam, Kshoudram, and warm Kánjikám. or a plaster composed of the same drugs and substances should be applied over the diseased locality.

In a case of ulceration, the ulcerated ear-lobe should be rubbed with the oil prepared and boiled with the drugs known as Madhukam and Kshirakákoli, or with those which form the group known as the Jivakádi-Varga ; while in a case where Vringhanam measures are to be adopted, lard prepared from the fat of a Godhá, boar, or snake might be used with advantage. In the Avamanthaka type the diseased ear-lobe should be washed and covered with a plaster composed of the drugs known as Prapaundarikam, Madhukam, Samangá and Dhavam, or rubbed with oil prepared and boiled with the same drugs. Similarly, a case of Kandu-Juta (accompanied with itching) would yield to a plaster composed of the drugs known as Sahadevá, Vishvadevá, and Saindhava salt pasted with goat's milk, or to the medicated oil boiled and prepared with the same drugs and substances.

First the leaf of a creeper, long and broad enough to fully cover the whole of the severed or clipped off part, should be gathered ; and a patch of living flesh, equal in dimension to the preceding leaf, should be sliced off (from down upward) from the region of the cheek and, after scarifying it with a knife, swiftly adhered to the severed nose. Then the cool-headed physician should steadily tie it up with a bandage decent to look at and perfectly suited to the end for which it has been employed (Sádhu Vandha). The physician should make sure that the adhesion of the severed parts has been fully effected and then insert two small pipes into the nostrils to facilitate respiration, and to prevent the adhesioned flesh from hanging down. After that, the adhesioned part should be dusted with the powders of Pattanga, Yashti-madhukam and Rasânjana pulverised together ; and

In a case of the Granthika type (accompanied by the formation of knotty growths in its inside) the knotty growths or glandular formations should be first removed, and the affected locality should be bled with a surgical instrument and dusted with powdered Saindhava salt. Likewise, in a case of Jámvala type, blood-letting should be resorted to by scarifying the seat of the disease, which should be then washed with a spray of milk. The ulcer sh[illegible]ld be healed after the perfect purification of its internal morbid [illegible]s. A case of the Srávi (secreting) type would readily yield to a [illegible]inal plaster composed of the drugs known as Madhuparni, and Mad[illegible]am, or of Madhukam pasted with honey, or to the medicinal oil prepared and boiled with the same drugs and substances. A case of the Dahyamána (burning) type should be treated with a plaster composed of the drugs known as the five Kalkas and Madhukam pasted together and mixed with clarified butter, or with a pasted compound of the drugs which form the group of the Jivakadi Varga with a quantity of clarified butter added to it.

the nose should be enveloped in Kárpása cotton and several times sprinkled over with the refined oil of pure sesamum. Clarified butter should be given to the patient for drink, and he should be anointed with oil and treated with purgatives after the complete digestion of the meals he has taken, as advised (in the books of medicine). Adhesion should be deemed complete after the incidental ulcer had been perfectly healed up, while the nose should be again scarified and bandaged in the case of a semi or partial adhesion. The adhesioned nose should be tried to be elongated where it would fall short of its natural and previous length, or it should be surgically restored to its natural size in the case of the abnormal growth of its newly formed flesh. The mode of bringing about the adhesion of severed lips is identical with what has been described in connection with a severed nose with the exception of the insertion of pipes. The physician, who is well conversant with these matters, can be alone entrusted with the medical treatment of a King.

Thus ends the sixteenth chapter of the Sutra-Sthána in the Sushruta Samhitá which treats of the Piercing and Bandaging of e[illegible]-lobes.

CHAPTER XVII.

Now we shall discuss the Chapter which deals with the mode of distinguishing between suppurating and non-suppurating swellings. **A'ma-pakkaishaniya-madhyayam.**

Diseases such as, Granthi (Aneurism), Vidradhi, (abscess) and Alaji (inflammation of the edge of the cornea) etc. are ushered in by a preliminary swelling which subsequently develops symptoms peculiar to each of them. These diseases differ in their symptoms and outward shape. A swelling which may appear at any part of the body, and is round, elevated, even, or uneven in its (surface) is called a **Shotha** (swelling). It restricts itself to the skin and flesh of its locality and is characterised by the several or concerted action of the deranged bodily humours. The **Shothas** (swelling) admit of being divided into six different types according as they are caused by the action of the deranged Váyu, Pittam, Kapham or blood, or are due to the concerted action of the three fundamental humours of the body, or are of traumatic origin.

Now we shall describe the symptoms which mark the respective actions of the humours in a swelling. A swelling due to the action of the deranged Váyu assumes a reddish or blackish hue and is shifting in its character. It feels rough and soft to the touch,

and is marked by a sort of aching pain (peculiar to the deranged Váyu) which vanishes at intervals.

A swelling, due to the action of the deranged Pittam, assumes a yellowish hue. It is soft and fluctuates under pressure, and is marked by an accumulation of blood in its body. It swiftly shifts from one part of the body to another, accompanied by a burning, sucking pain. A swelling, brought about through the deranged condition of the Kapham, assumes a grey or whitish colour. The skin becomes glossy and cold, and the swelling very slowly changes its original site, if it shifts at all, accompanied by pain and itching. A swelling engendered through the concerted action of the three bodily humours successively manifests the symptoms and assumes the colours respectively peculiar to each of them. The symptoms which mark a swelling due to the action of the vitiated blood are identical with those which are exhibited in a swelling of the Pittaja type with the exception of the blackness of the part (and an increase of heat). A swelling due to an external blow traumatic) manifests symptoms peculiar to the Pittaja and blood-origined types.

A swelling, which does not yield to internal and external remedies on account of an excessive accumulation of the deranged local humours, or through t insufficient or contrary effects of the remedial agne shows sign of suppuration. can

Now hear me describe the symptoms, which respectively mark an unsuppurated, suppurating or suppurated swelling. The unsuppurated or immature stage continues as long as the skin of the swelling retains its natural hue, marked by a little pain and heat in its inside, and coldness, hardness and a slight elevation of its surface.

The suppurating stage gives rise to a sensation of pricking pain in the affected locality. The swelling seems as if it is being pricked with needles, or bitten or wandered over by a host of ants, or cut with a knife, or pierced with a spear, or thrashed with a club, or pressed with the hand, or scraped round with fingers, or burnt with a fire or an alkali. The patient complains of a sort of sucking, burning pain in the swelling of a fixed or shifting character. The patient, as if stung by a scorpion, does not find comfort in any place or position. The hue of the local skin is changed and the swelling goes on increasing like an inflated leather bag ; and fever, thirst, a burning sensation and aversion to food etc. gradually supervene.

The suppurated stage is marked by an amelioration of the local pain and a yellowishness of the skin over the swelling, which cracks and seems too big, thus giving pue to folds in the integument. The swelling exhibits the uation under pressure and shows perceptible signs large cainution. Moreover, it yields to pressure and

reaches its former height when the pressure is removed. The pus or the suppurated matter changes its place, or shifts from one part of the swelling to another under pressure like water in a bloated leather bag. The distressing symptoms gradually subside; the patient again evinces a desire for food, and feels a constant inclination for scratching the affected part which is characterised by a sort of aching pain. Sometimes, as in cases of traumatic swelling or in those brought about by a deranged condition of the Kapham, the suppurating process is restricted to the deeper tissues of the affected part and hence fail to exhibit its characteristic symptoms—a fact which often misleads a physician (surgeon) as regards the true state (lit :—whether suppurated or not) of the accompanying swelling. But the knowledge that a process of suppuration, occurring in the deeper tissues of an affected part, is accompanied by alleviation of the pain and swelling which becomes as compact as a stone and cold to the touch, and the local skin resuming its natural colour, would unquestionably ward off all apprehensions for error of judgment.

Authoritative verses on the subject :—A physician (surgeon) who is fully conversant with the symptoms which are respectively exhibited by (an inflammatory) swelling in its unsuppurated, suppurating and suppurated stages, is alone worthy of the epithet; the rest are but impostors. Since there can

be no pain without the intervention of the deranged Váyu ; and no suppuration can set in without the action of the deranged Pittam ; nor pus, without the action of the deranged Kapham ; it is evident that a suppurated swelling is marked by the combined and simultaneous action of the three deranged humours of the body.

According to certain authorities, the deranged Pittam gets the preponderance over the local Váyu and Kapham, and transforms the blood into pus out of its own preponderant energy.

The incision or opening of a swelling in its inflammatory or unsuppurated (lit. immature, unripe) stage is attended with the destruction of the local flesh, ligament, bone, vein, or joint, and is usually followed by excessive hæmorrhage. The incidental wound becomes extremely painful. Many distressing symptoms begin to manifest themselves in succession and cavities are formed inside the wound which may lapse into a case of Kshata-Vidradhi (a type of ulcerated abscess).

On the other hand, a fully suppurated swelling, left unopened for a long time out of fear or ignorance by the attending physician, is attended with symptoms which are fraught with dreadful consequences. The accumulated pus, unable to find an outlet, is infiltrated and attacks the deeper tissues of the affected part, and forms large cavities or sinuses in their inside, thus converting

the disease into one of a difficult or incurable type.

Authoritative verses on the subject :—The physician (surgeon) who opens an unsuppurated or unripe swelling out of ignorance, as well as the man who neglects a fully suppurated one, should be looked upon as the vilest Chandála for his wrong or incorrect diagnosis. The patient should be provided with a meal before the surgical operation, or strong wine should be given him, if he is found to be addicted to the habit of taking any. The effect of a good meal under the circumstance will be to keep up the strength of the patient and to guard against his swooning during the operation, while the effect of wine will be to make him unconscious of the pain. The rule as regards the feeding and anæsthetising (wine giving) of the patient should be strictly adhered to, since the internal vital principle of a man is invigorated by the strength of his body which is the product of lymph-chyle, the essence of food, and the quintessence of the five material principles. A swelling, no matter whether limited or extensive, spontaneously runs on to suppuration, if not medicinally treated, or left to nature. The base of such a swelling goes on extending. It becomes unequally suppurated and reaches an unequal elevation, thus affecting the deeper tissues of the part and swiftly running into one of an incurable type. A swelling, which does not yield to the application of medicated plasters

or to corrective or blood-letting measures, speedily and uniformly suppurates, and is marked by a small and restricted base and a circular or conical elevation. As a blazing fire fed by gusts of favourable wind soon consumes a withered forest, so the incarcerated pus, in the absence of any outlet, attacks and eats away the healthy flesh, veins and nerves of an organism.

Surgical acts in connection with an abscess (Shotha) may be divided into seven kinds such as 1. mutilation (**Vimlápanam**) of the swelling by massage, 2. **Avashechanam** (bleeding or application of leeches) 3. **Upanáham** (poulticing) 4. **Pátanam** (opening or incision) 5. **Shodhanam** (purification of the internal morbid matter of an incised boil with corrective medicines) 6. **Ropanam** (healing) and 7. **Vaikritápaham** (restoring of the natural colour of the skin to the cicatrix).

Thus ends the seventeenth Chapter of the Sutrasthánam in the Sushruta Samhitá which treats of how to distinguish between suppurating and non-suppurating swellings.

CHAPTER XVIII.

Now we shall discourse on the Chapter which treats of dressings and bandages of ulcers **(Vranalepana-Vandha-Vidhi-madhyayam).**

A medicinal plaster should be regarded as the general and most important remedy in all cases of (inflammatory) swelling. We shall presently discuss the nature of plasters to be used in each specific form of disease. A bandage plays a more important part (than a medicinal plaster) as regards its healing and curative efficacy, inasmuch as it materially contributes to the purification and healing of an ulcer and keeps the joints steady. A medicinal plaster should be applied from down upward or in a direction contrary to that of the local hair (Pratiloma). It should never be applied (so as to run down with the local hair), since a plaster, applied as directed above, would firmly stick to the surface of the affected part, and naturally percolate through the follicles of the hair and the external orifices of the vehicles of perspiration (Sudoriferous ducts), thus permeating the organism with its own native potency and virtue.

A medicinal plaster should be removed or replaced by a fresh one as soon as it has become dry, except in cases where the purpose of its application

would be found to be the drawing of pus to a definite head (Pidayitavya Vrana).'

A dried medicinal plaster will prove useless or abortive, and may act as a caustic or corrosive agent. A medicinal plaster admits of being grouped under any of the three subheads of **Pralepa**, **Pradeha** and **Álepana** (according to its thickness or consistency) etc.

Medicinal plasters :—A medicinal plaster of the **Pralepa** class is applied thin and cold, and is made to be endued with an absorbing (Vishoshi) or non-absorbing (Avishoshi*) property according to the nature of the effect desired.

On the other hand, a medicinal plaster of the **Pradeha** class is applied either thick or thin, warm or cold, and acts as a non-absorbent.

A medicinal plaster of the **Álepana** class stands midway between a Pralepa and a Pradeha.

Of these, a plaster of the **Pralepana** class is possessed of the efficacy of pacifying or restoring the deranged blood and Pittam to their normal condition. A plaster of the **Pradeha** class pacifies the deranged Váyu and Kapham and tends to bring about the union, purification, and healing (of an ulcer), causing the

* As in the case of a Pidayitavya ulcer, described before, where the withdrawing or gathering of pus to a definite head is desired.

subsidence of pain and swelling. Hence it should be used in all types of swelling whether ulcerated or otherwise.

A medicinal plaster (**Álepanam**) applied over an ulcer is called by the changed epithet of **Kalka** or **Niruddha-Álepanam** (arrestive or astringent plaster). The function of such an **Álepanam** consists in arresting a local hæmorrhage, in softening the ulcer, in withdrawing sloughing or putrifying flesh from its cavity, in checking the formation of pus in its inside, and in correcting the morbid matter or deranged humours (that retard its union and healing).

Metrical Texts :—A medicinal plaster of the **Álepanam** class would prove beneficial in a swelling marked by the absence of suppuration, inasmuch as it subdues the characteristic symptoms of each of the deranged bodily humours *viz*, the burning sensation (peculiar to the deranged Pittam), itching (incidental to the deranged state of Kapham) and the aching pain (which marks the disorder of the bodily Váyu). Its action lies principally in cleansing the skin, the flesh and the blood of all morbiferous diatheses, in removing the burning sensation, and in alleviating the piercing pain and itching.

A physician (surgeon) should use an **Álepana** in (ulcerous) diseases appearing about the anus, or about any other vital part (Marmas) of the body, with a view

to bring about the purification of the (local deranged humours). In diseases caused by a deranged condition of the Váyu, Pittam or Kapham, medicinal plasters should be respectively mixed with a quantity of clarified butter, measuring a sixth, quarter, and an eighth part of their respective quantities.

It has been said that the thickness of an **Álepanam** should not be made to exceed that of the newly-flayed skin of a buffalo. Under no condition, should a medicinal plaster be applied at night, inasmuch as such a measure would arrest the escape or radiation of heat from the swelling in virtue of its own inherent humidity, and thus bring on an aggravation.

Metrical Texts :—In diseases, which are amenable to the application of medicinal plasters of the **Pradeha** type, as well as in swellings resulting from the vitiated condition of blood and the Pittam, or in those which are of extrinsic origin, or are due to the effect of a poison or blow, the plaster should be applied cold, by day. A plaster should not be applied without removing the previous one, nor over the one applied on the day before, as this would increase the local heat and aggravate the pain and the burning sensation on account of its greater or increased thickness. A medicinal plaster, previously used, should not be moistened and applied again ; it should be held

as absolutely ineffective owing to its virtue having been previously used or soaked in.*

Articles of bandaging :—Now we shall enumerate the names of articles which are required in bandaging ulcers. They are as follows :—

Kshauma (cloth woven with the fibres of Atasi plant), Ávika (blankets made of sheeps' wool), Dukulum (loom-silk), Kausheya (silk), the Patrorna (a kind of cloth made of the fibres of Nága trees, which grow in the provinces of Paundra and Magadha), the Chinapatta (Chinese cloth), Antarvalkala (the inner bark or fibres of a tree), Charma (skin), the Alávu Shakala (the skin of a gourd), the Latá-Vidala (half thrashed Shyámá creepers), string or cord, the cream of milk, Tula-phalam (cotton seeds) and iron. These accessories should be used in consideration of the exigencies of each case and the time or the season of the year in which it occurs.†

* This portion of the text has been omitted by Chakrapani in his commentary entitled the *Bhánumati*.

† In a swelling or ulcer caused by the deranged Váyu and Kapham, the bandage should consist of a piece of thick cloth ; whereas in summer it should consist of thin linen. Similarly, a bandage, tied round any deep or hollow part of the body, should consist of a piece of thick cloth. The contrary rule should be observed, when the seat of the bandage would be at any flexible part of the body.

Similarly, in the case of a snake-bite, a ligature should be firmly tied above the punctured wound with a string or twisted cord of cotton, while a fractured bone should be set right by twisting bunches of half-thrashed shyámá creeper (Latávidala) round the seat of fracture. A local hæmorrhage

Bandages :—The fourteen different forms of bandage are named as the Kosha (a sheath or scabbard), the Dáma (a cord or chaplet), the Svastika (cross), the Anuvellita (a twist), the Pratoli (a winding street or road), the Mandala (ring), the Sthagiká (a betel-box), the Yamaka (double or twin), the Khattá (a bedstead), the China (a streamer), the Vivandha (noose), the Vitána (canopy) the Gophaná (cow-horn), the Panchángi (five limbed). Their shapes can be easily inferred from the meanings of their names.

Applications :—Out of these, the **Kosha** or the sheath-shaped bandage should be tied round the thumb and the phalanges of the fingers ; the **Dáma** or chaplet-shaped bandage, round the narrow or unbent parts of the body ; the **Svastiká** or cross shaped, round the joints, round the articulations or the Marmas known as the Kurchakas (Navicular ligaments) round the eye-brows, round the ears and round the region of the breast. Similarly, the bandage, known as the **Anuvellita**, should be used when the seat of the affection would be found to be situated at the extremities (hands and legs). A bandage of the **Protoli** class should be tied round the neck or the penis ; the **Mandalam** (ring-

should be arrested by binding the part with milk-cream, while the affected part in a case of Ardita (facial paralysis) as well as a broken tooth should be bound with strings of iron, gold or silver. Warts, etc. should be bandaged with Ela (cardamom skins), while dried gourd-skins should be used in bandaging ulcers on the head (scalp).

shaped), round the circular parts of the body; the **Sthagiká** (betel-box), round the glans-penis and the tips of the fingers; the **Yamakam**, round the confluent or contiguous ulcers; the **Khattá** (bedstead-shaped), over and around the cheeks, cheek-bones, and the parts between the ears and the eye-brows; the **Vitánam** over the skull, the **Gophaná** (horn-shaped), round the region of the chin; and the **Panchángi**, round the part lying above the clavicles.

In short, a bandage of any particular shape should be tied round the part of the body to which it would be found to be most suited. Now we shall deal with the Yantranas (fastenings of bandages) which admit of being divided into three different classes according as they are fastened above, below, or obliquely round an ulcer.

Kavaliká (Tow) :—Any soft stuffing or tow (such as the leaves or the bark of trees of medicinal virtues) between the medicine applied over an ulcer and the bandaging linen is called the **Kavaliká** (medicated tow). The tow or the Kavaliká should be placed thickly (on the seat of affection); and then the physician (surgeon) having pressed it with his left hand should* place a piece of straight, soft, untwisted,

* Carefully examining whether the applied remedy had been uniformly distributed over the diseased surface and whether the contemplated pattern of bandage would be actually suited to the case.

and unfolded or unshrivelled linen over it, and then firmly tie up the bandage in a manner so as not to leave any knot over the seat of the ulcer, or to cause any discomfort to the patient.

Introduction of lint :—A **Visheshiká** (lint) saturated with honey, clarified butter, and a medicinal paste should be inserted into the ulcer. Care should be taken not to introduce the lint extremely dry, or oily (oversoaked in a lubricating or oily medicinal preparation), inasmuch as an over-lubricated lint would give rise to an excessive formation of slimy mucus in the ulcer, whereas, its parched substitute would bring about the friction and the consequent breaking of the edges of the ulcer, like one misplaced or wrongly inserted.

A bandage should be tied in any of the three ways of Gádha, Sama and Shithila fastenings according to the shape and seat of the ulcer.* A tight bandage (**Gádha-Vandha**) should be tied round the buttocks, round the sides, round the arm-pits, round the inguinal regions, round the breast or round the head. A bandage of the **Sama** pattern should be fastened round the ears, round the extremities (hands

* **Additional text :**—A bandage, tightly tied round an ulcerated or affected part of the body without causing any pain or discomfort to the patient, is called a Gádha-Vandha, while the one which is loosely bound is called Shithila, the one neither too tight nor too loose being called a Sama-Vandha.

and legs), round the face, round the throat, round the lips, round the penis, round the scrotum, round the back, round the belly and the chest. A loose bandaging (**Shithila-Vandha**) should be the rule in the region of the eyes and locations of important joints or unions.

An ulcer, brought about or characterised by the symptoms of the deranged Pittam and occurring at a place where a tight bandaging is indicated, should be fastened with one of the Sama-Vandha class, and with a Shithila bandage where one of the Sama type would be indicated ; whereas it should not be bandaged at all in the event of a loose bandage (Shithila-Vandha) being indicated. The same rule should be observed in the case of an ulcer caused through a diseased or contaminated state of the blood. Similarly, in the case of an ulcer produced through a deranged condition of the Kapham, a loose bandaging, otherwise enjoined to be adopted, should be substituted for one of the same pattern. A tight bandage should give place to a lighter one under the same circumstances, and such a procedure should be deemed as holding good even in the case of an ulcer caused by the action of the deranged Váyu.

In summer and autumn, the bandage of an ulcer, due to the vitiated blood or Pittam, should be changed twice a day ; while the one tied round an ulcer of the deranged Váyu or Kapham, should be changed on each

third day in spring and Hemanta. Similarly, an ulcer, marked by the action of the deranged Váyu, should be bandaged twice a day. "Thou shalt exercise thy own discretion, and vary or adopt the preceding rules of bandaging according to the exigencies of each case."

A medicated lint fails to have any efficacy but rather tends to augment the local pain and swelling where a bandage, enjoined to be loosely bound, or bound up with moderate and uniform steadiness (Sama-Vandha), is replaced by a tight or deep fastened one (Gádha-Vandha). A loose bandage, injudiciously used in a case where a tight or a moderately firm bandage should have been used, would cause the medicine to fall off from the lint and give rise to the consequent friction and laceration of the edges of the ulcer. Similarly, a moderately firm and steady bandage (Sama-Vandha) fastened in a case where a light or loose bandage should have been used, would fail to produce any effect. A proper bandage would lead to the subsidence of pain, and the softening of the edges of the ulcer, thus bringing about a purification of the local blood.

Evils of non-bandaging :—An ulcer, left uncovered and untied with a suitable bandage, is soon assailed by gnats and flies. It is moistened by sweat and cold wind, etc. and stands in danger of being irritated by deposits of many foreign matters

such as, the particles of bone, dust, weeds, etc. Moreover, a constant exposure to heat or cold brings on varied pains, the ulcer develops into one of a malignant type, and the applied medicinal plasters are dried, encrusted and speedily fall off.

Metrical Texts :—A smashed, lacerated, fractured, dislocated, displaced bone, or a vein or a ligament similarly jeopardised, may be soon healed or set right with the help of a surgical bandage. The patient is enabled by such a means to lie down, or stand up or move about with ease. And an increased facility of rest or movement leads to speedy healing.

Cases where bandaging is prohibited :—Ulcers should not be bandaged at all that are due to the deranged condition of blood or Pittam, or to the effects of a blow or of any imbibed poison, and characterised by a sucking, burning pain, redness, or suppuration, as well as those which are incidental to burns, or to the applications of actual or potential cauteries marked by a sloughing or phagedenic character.

Metrical Texts :—An ulcer due to a scald in a leper or a carbuncle in a diabetic patient (Pidaká) as well as a fleshy condylomata due to a bite from a venomous rat, or any other poisonous ulcer should not be bandaged at all. The same rule should be observed

* **Different reading :**—Pricking, burning pain.

in the case of a dreadful suppuration about the anus, or in that of a sloughing ulcer. An intelligent physician, familiar with the specific features of ulcers, should observe the shape of the one under treatment, and prognosticate the result from its seat or locality and the nature of the deranged bodily humours involved in the case. The season of the year in which an ulcer is first seen to appear also determines the nature of the prognosis.

Bandages may be tied up either from above, below, or from the sides of a diseased locality. Now I shall fully describe the process of bandaging an ulcer.* First the Kavaliká or tow should be thickly laid over the seat of the ulcer and after that a piece of soft and unshrivelled linen should be placed upon it, and the bandage should be loosely or tightly tied up according to the directions laid down before.*

The lint and the (inserted) medicine should not be over-lubricated and must not be inordinately oily in as-much as such a lint or medicine would give rise to the formation of excessive and abnormal slimy mucous in the ulcer. On the other hand, an extremely dry lint would set up friction and laceration of the edges of the ulcer, like the one wrongly or improperly inserted

* Several authorities such as Gayadása, Brahmadeva, etc. hold this portion of the text to be an interpolation. Both Dallana and Chakrapáni have included it within their commentaries with nearly the same remark.

into its cavity, causing numbness, excessive exudation and unevenness of its surface. A lint, properly saturated with a medicinal plaster and rightly inserted into the cavity of an ulcer, leads to its speedy healing. All secreting measures in connection with an ulcer should be continued or stopped according to its condition, whereby the nature and shape of the bandage should be determined as well. An ulcer, due either to the deranged condition of blood or the Pittam, should be dressed and bandaged once a day which may be extended to a number of times in the case of an ulcer brought about by the deranged Kapham and Váyu. The pus or the local morbid matter should be secreted by pressing the base or the bottom of an ulcer and by gently moving the hand along it in a contrary direction (down, upward); and all bandages (around joints and Gudasandhis) should be duly tied up.

The rules laid down under the head of adhesioning the parts of a bifurcated ear-lobe would hold good in a case of severed lips as well. The measures amply discussed in the present Chapter should be extended by means of inference, analogy and judgment to apply *mutatis mutandis* to the bandaging of a fractured or dislocated bone.

An ulcer, properly bandaged, has a greater chance of not being affected by lying down, sitting up, or any other movement of the patient, nor by the joltings

of a conveyance he may ride or be carried in. An ulcer affecting a vein or a ligament or the skin (superficial) or the flesh or the bones cannot be healed without bandaging it. An ulcer situated in any of the internal chambers (cavities) of the body, or occurring at any junction of the limbs or organs, etc. or having its seat in a bone and whether of a deep, superficial, malignant, or corrosive character, cannot be brought to a successful termination without the help of a bandage.

Thus ends the eighteenth Chapter of the Sutrasthánam in the Sushruta Samhitá which treats of the dressing and bandaging of ulcers.

CHAPTER XIX.

Now we shall discuss the Chapter which treats of the management or nursing of a patient with an ulcer etc. **(Vranito-pasaniya-madhyayam).**

First of all a suitable chamber should be sought and selected for a patient, suffering from an ulcer. It should be roomy and spacious and situated in a commendable site.

Metrical Text :—Diseases, which are physical, mental or traumatic in their origin, can never attack a person who dwells in a clean and spacious chamber, protected from excessive heat, and strong gusts of wind.

The bed should be spread clean, ample and comfortable, with the head of the beadstead turned towards the east, and provided with some kind of a weapon.

Metrical Texts :—In a spacious and well-spread bed, an ulcer-patient can toss about and move his limbs with the greatest comfort. The reason for the head being turned towards the east is that the patient may easily make obeisance to the (demons and) celestial spirits, who inhabit that quarter of the sky. Thus the patient shall lie in comfortable posture, attended upon by his sweet-talking friends and relations.

Metrical Text :—The friends and relations of a patient shall alleviate the pain of his ulcer with pleasant and interesting topics, and by solacing him with the prospect of a speedy recovery. An ulcer-patient should not sleep in the day time, as it tends to aggravate the pain, swelling and redness of the ulcer, increases its exudations, and gives rise to itching and heaviness of the limbs.

The patient must carefully protect the ulcer when moving any of his limbs, such as standing up, or sitting down, or turning on his sides, or while moving about, or speaking in a loud voice.

Metrical Text :—An ulcer-patient, even if he feels himself strong and capable, should avoid a standing or sitting posture, as well as locomotion, and day-sleep.* These acts done to excess, or a long confinement to bed would aggravate the bodily Váyu, thus causing pain in the ulcer.

He should studiously avoid the company and touch of, and even conversation with, women with whom he can legitimately have intercourse.

Metrical Text :—The sight of a woman etc might lead to the secretion and emission of semen and

* **Different reading :**—Riding in a carriage or on horseback, and garrulousness.

give rise to all the distressing symptoms, which are consequent upon an act of actual coitus under the circumstance.

Prohibited diet:—A diet consisting of newly harvested Dhányam, Másha pulse, Sesamum, Kaláya, Kulattha, and Nishpába should be avoided by an ulcer-patient. The pot-herbs known as Haritaka-sháka, acid, saline or pungent substances, treacle and its modifications, cakes, dried meat, dried pot-herbs, goat's flesh, mutton, meat of animals which are amphibious in their habits or which live close to water, lard, cold water, Krishará (a composition prepared with sesamum, Másha pulse and rice), Páyasa (a sweetened preparation of rice, milk and sugar boiled together), curd, milk and whey should be regarded as unwholesome.

Metrical Texts:—Vegetables and articles which belong to the groups commencing from the one technically known as the **Nava-Dhánya-Varga**, and ending with the one known as the **Takra-Varga**, should be understood as possessed of the property of increasing the pus in an ulcer and of aggravating the deranged bodily humours. If in the habit of taking wine, an ulcer-patient will do well to avoid the use of spirituous liquors, such as Mairaya, Arishta, Ásava, Sidhu, Surá and its varieties.* An ulcer may develop

* The species of wine which are made of the expressed juice of grapes and are antacids in their virtues, as well as those mentioned under the head of Hæmoptysis, may be given to an ulcer-patient.

into one of a malignant type through the use of a wine which is acid in its taste, or is sharp, dry and heat-making in its potency, or is followed by almost instantaneous intoxication.

An ulcer-patient should avoid all things that retard the progress of a rapid cure, such as wind, dust, smoke, exposure to heat and cold, over-eating, unpleasant sounds and sights, envy, humiliation, fear, anger, grief, scheming, keeping of late hours, sitting or lying in an uneven posture, fasting, garrulousness, physical exercise, leaping or a standing posture, locomotion, exposure to cold winds, ingestion of unwholesome, incompatible or indigestible substances, and flea-bites on the affected locality.

Metrical Texts :—The food, partaken of by a weakened and emaciated ulcer-patient, is not fully digested owing to the above mentioned, and other multifarious causes. The undigested food violently disturbs and aggravates the bodily humours, which move about in the body and give rise to swelling, secretion, burning pain and suppuration in the ulcer.

An ulcer-patient should always be clad in clean and white garments, have his hair and nails closely clipped and pared off, and live in humble devotion to the Bráhmans, to the gods and the preceptors. The rites of benediction and divine peace should be done unto him. Wherefore ? Because the monsters and

demons of mighty prowess, who are the attendants of the gods Pashupati, Kuvera and Kumára, roam about in quest of prey, and visit the bedside of an ulcer-patient out of their fondness for flesh and blood, being attracted thereto by the smell of the secreted and morbid matter in the ulcer. These evil spirits come to take away the life of a patient in a case which is doomed to terminate fatally, while in a successful case their advent is due to the desire of extorting sacrificial oblations from him.

Authoritative verse on the subject :—These honour-seeking evil spirits should be worshipped and propitiated with the whole heart ; and offerings of burning incense sticks, edibles and sacrifices, etc. should be made to them with the greatest humility.

The evil spirits, worshipped and propitiated as above, spare the life of a self-controlled patient (out of compassion). Hence he shall be kept in a chamber furnished with flowers, garlands, weapons, fried paddy, and lamps kept continuously burning. His friends and relations should regale him with fond and loving topics to drive away the feeling of sleepiness with the prospect of a speedy cure.

Metrical Texts :—A patient, constantly cheered with the suggested prospects of a speedy

recovery, and beguiled with pleasant and congenial discourses, soon gets rid of his complaint.

Morning and evening, the physicians and the Bráhmans should perform the rites of benediction, over him, as laid down in the Rik, Yajuh, Sáman and the Atharva Vedas.

Metrical Texts :—For ten consecutive days, the room of the patient should be diligently fumigated, morning and evening, with the fumes of mustard, Arishta-leaves, clarified-butter and salt made into a kind of incense stick.

Drugs such as Chhatrá, Atichhatrá, Lánguli, Jatilá, Bramhachárini, Lakshmi, Guhá, Atiguhá, Shata-viryayá, Sahasra-viryayá and white mustard seeds should be placed on the head of the patient.

Metrical Texts :—The patient should be fanned with blowing chowries so that the ulcer may not be in any way thrashed or lacerated during the fanning. The ulcer should not be scratched or pressed. The patient should be carefully watched, while asleep. Demons, that get abroad in the night, fly from the presence of an ulcer-patient protected as above, as herds of deer fly from the forest where lions are found.

Regimen of diet and conduct :— An ulcer-patient living on a diet consisting of old and

boiled Sháli rice, not extremely liquefied, and treated with clarified-butter, and taken with the cooked meat of animals of the Jángala species, soon gets rid of his disease. A diet consisting of boiled rice, the pot-herbs known as the Tanduliyakam, Jivanti, Sunishannaka, Vástuka, immature Mulaka, Vártáku, Patola and Káravella, fried with Saindhava (rock-salt) and clarified-butter, and seasoned with the expressed Juice of Dhádima and Ámalakam, or of Mudga soup treated as above, should be prescribed for the patient. Barley powder, Vilepi, Kulmásha and boiled water, should be likewise given to the patient for food and drink. Fatigue or physical exercise causes the ulcer to swell, while the keeping of late hours increases the local redness. A sleep during the day under the circumstance would give rise to pain in the affected part, while a coitus may bring on the death of the patient.

An ulcer-patient, not given to sleep in the day, and living in a room protected from gusts of wind, and strictly following the instructions of his physician, (surgeon) is healed in the course of a very short time and will enjoy a long life through the observance of the abovesaid regimen of diet and conduct. This is the dictum of **Dhanvantari**.

Thus ends the nineteenth Chapter of the Sutrasthánam in the Sushruta Samhitá which treats of the nursing or management of an ulcer-patient.

CHAPTER XX.

Now we shall discuss the Chapter which treats of the salutary and non-salutary effects of regimen, etc. **(Hitahitiya-madhyayam).**

According to certain eminent medical authorities, an article or a substance which is beneficial in derangements of the bodily Váyu may prove positively injurious in a Pittaja affection ; hence it is impossible to name an article or substance which is absolutely or universally wholesome (irrespective of the nature and type of a disease, and of the deranged bodily humours involved therein).

But we cannot subscribe to the foregoing hypothesis, since by nature or combination, things (substances) are, or become endued with properties, which prove absolutely beneficial or unconditionally harmful or exert a mixed virtue (both beneficial and injurious) according to the difference in the nature and type of the disease in which they are employed. Things or articles such as, clarified-butter, water, milk and boiled-rice, etc. may be denominated as absolutely beneficial owing to their congeniality to, or natural suitableness to the human organism.

Similarly, substances such as fire, alkali and poison, may be designated as unconditionally harmful in virtue

of their burning, suppurating (lit : boiling) and fatal effect upon the organic bodies in general. A substance, which is innocuous by nature, may prove equally injurious as any active poison through an injudicious or incompatible combination ; whereas a substance or an article, which proves beneficial in a derangement of the Váyu, may prove otherwise in a disorder of the Pittam.

Articles or substances which may be safely included within the food stuffs of all human beings are the members of the group (Varga) known as the red Shâli, the Shastika, the Kánguka, the Mukundaka, the Pánduka, the Pitaka, the Pramodaka, the Kálaka, the Ashanaka, the Pushpaka, the Karddamaka, the Shakunáhrita, the Sugandhaka, the Kalama, the Nivára, the Kodrava the Uddálaka, the Shyámáka, the Godhuma and the Venu, etc., as well as the flesh of the Ena, the Harina (copper coloured deer), the Kuranga, the Mriga, the Mrigamátriká, the Shvadanstrá, the Karála, the Krakara, the Kapota (pigeon), the Láva, the Tittiri, the Kapinjala, the Varttira, and the Varttika, and such like beasts and birds. The varieties of pulse which form the articles of human food are known as the Mudga, the Vana-Mudga, the Makushtha, the Kaláya, the Masura, the Mangalya, the Chanaka, the Harenu, the the Ádhaki and the Satina. Similarly, the different species of pot-herbs, which may be safely used by a man to give a greater relish to his food, are named as the

Chilli, the Vástuka, the Sunishannaka the Jivanti, the Tanduliyaka, and the Maṇdukaparni, etc. Clarified-butter, the salt known as the Saindhava, and the luscious juice of the pomegranate and the Ámalakam, should be generally deemed the most wholesome articles of food.

Similarly, the practise of self-control, residence in a room protected from the strong gusts of wind, sleeping only at night, tepid water, and moderate physical exercise should be regarded as absolutely conducive to a better preservation of health.

We have already enumerated the names of substances which are absolutely beneficial or unconditionally injurious to human health. Things which are both wholesome and injurious are those, which, for example, may prove beneficial in a distemper of the bodily Váyu though otherwise in a Pittaja affection. The Valli fruit, the Káraka, the Karira, the Amla-phala, the salt, the Kulattha, the Pinyáka, curd, oil, Virohi, cakes, the dried pot-herbs, goat's flesh, mutton, wine, the Jamboline fruit, the Chilichima fish, the flesh of the Godhá, and the Varáha (wild boar) being eaten simultaneously with milk, furnish an example of articles which may act as deadly poisons through incompatible combinations.

Metrical Texts :—An intelligent physician, considering the nature of the disease, the strength and

temperament of the patient, and the state of his digestion as well as the seat of the affection, the physical features of the country and the then prevailing season of the year, should prescribe a diet which he thinks the most proper and suitable to the requirements of the case. Since the conditions infinitely vary in the different types of diseases and even the same conditions do not obtain in one and the same type,* physicians generally prescribe a diet of their own selection, one determined with regard to its general effect on health, in preference to one that has been laid down in books of medicine.

If asked to prescribe either milk or poison to a healthy person, a physician would naturally prescribe the former, and thereby, prove the absolute wholesomeness of milk and unconditional harmfulness of poison. Thus is verified, Sushruta, the correctness of the dictum, that things such as water, etc., are absolutely and unconditionally wholesome or otherwise, by virtue of their respective natural properties.

Things which are unwholesome through combination :—Now I shall enumerate the names of substances which become positively unwholesome through incompatible combinations. The

* The propriety and impropriety of a particular diet should be determined with a full regard to the antecedent and attending circumstances of a particular malady.

flesh of any domestic (Grámya) or aquatic (Ánupa) beast or bird, as well as the flesh of those which live in marshy ground (Audaka), should not be eaten with boiled rice prepared from paddy which has commenced sprouting, or with lard, honey, milk, treacle or Másha-pulse. The pot-herbs, known as the Rohini and the Játu-sháka, should not be partaken of in combination with milk and honey; nor the flesh of a heron, eaten simultaneously with Kulmásha and the spirituous liquor known as Váruni. Maricha (black pepper) and Pippalis should not be eaten in combination with the pot-herbs known as the Kákamáchi. The pot-herbs known as the Nadima and Siddhi should not be simultaneously eaten with curd, and the flesh of a cock. Honey should not be taken immediately after drinking warm water, nor meat and bile should be simultaneouly eaten. Surá (wine), Krishará and Páyasa should not be taken in combination. Similarly, Souviraka and sesamum paste, fish and modifications of sugarcane juice, treacle and Kákamáchi, honey and Mulakam, treacle and the flesh of a wild boar, or honey and boar's flesh should not be taken in combination.

Similarly, milk and Mulakam, mango fruit and Jamboline fruit and the flesh of Godhá, Porcupine and hog should not be eaten together. All fish, specially those of the Chilichimi species, should not be taken with

milk, nor the fruit of a plantain tree should be simultaneously eaten with Tála fruit, milk or whey. The fruit known as Lakucha should not be taken with milk, curd or meat soup, nor with honey and clarified-butter, nor immediately before or after the drinking of milk.

Incompatible preparations of food:— Now we shall enumerate the names of substances, which become unwholesome through incompatible preparations. Flesh of pigeon fried with mustard oil should not be eaten. The flesh of a Kapinjala, Myura (peacock), Láva, Tittira, and Godhá, boiled with castor oil and on a fire of the twigs of castor plants, should not be eaten. Clarified-butter, kept in a vessel of Indian bell metal for ten consecutive days, should be rejected as unwholesome. Honey should not be used in combination with an article or substance heated by fire, nor in the seasons of spring and autumn. The pot-herbs known as the Kákamáchi, boiled in a bowl in which fish or ginger had been previously boiled or prepared, should be rejected as positively injurious.

Similarly, the pot-herbs known as the Upodiká should not be eaten by boiling them with the levigated paste of sesamum. The flesh of a heron prepared with hog's lard should not be taken with the pulp of the cocoanut fruit. The flesh of a Bhása bird, roasted on a spit over a charcoal fire, should not be eaten.

Objectionable proportions :—Now we shall enumerate the names of substances which become unwholesome by being mixed in objectionable proportions. Two oily substances (such as oil and clarified-butter) or honey and any of the oily substances, mixed in equal proportions, should not be taken ; nor should rain water be drunk immediately after having taken honey and clarified-butter.

Incompatible tastes, potencies and chemical actions :—Now we shall describe the substances enumerated in couples, and possessed of different tastes, which prove incompatible to each other through their respective tastes, potencies and chemical actions (Vipáka). Sweet and acid tastes, or sweet and saline tastes should be deemed incompatible to each other in respect of their potencies and inherent properties. Sweet and acrid tastes are incompatible to each other in all the above three respects.

Similarly, sweet and bitter, or sweet and astringent things should be deemed incompatible to each other in respect of their tastes, and chemical action. Acid and saline things are incompatible to each other as regards their flavours. Acid and acrid things are incompatible as regards flavour and chemical action. Acid and bitter, or acid and astringent things, are incompatible to each other, both as regards their respective flavours, potencies, and digestive or chemical transformations.

Saline and pungent things are incompatible to each other as regards their respective flavour (Rasa) and digestive (chemical) transformation.

Similarly, saline and bitter things or saline and astringent things are incompatible to each other in respect of all the three abovesaid relations and categories. Pungent and bitter tastes are incompatible to each other in respect of flavour and digestive transformation, whereas substances of pungent and astringent or bitter and astringent tastes are incompatible to one another as regards their respective potencies, flavours and digestive (chemical) action or transformation.

Degrees of incompatibility :—Substances that are incompatible with, or antagonistic to, the system through a difference of degree or intensity, as well as things which bring about an extreme dryness of the organism, or those which are extremely oily in their composition or are characterised by extreme cold or warmth, should be categorically rejected.

Authoritative verses on the subject :—Things or substances which are incompatible to one another in their respective tastes, potencies and reactionary transformation should be denied as absolutely unwholesome, while the rest should be considered as possessed of mixed virtues (wholesome or

injurious under certain circumstances) as described before.

By taking substances which are incompatible to one another as regards their tastes, potencies and digestive transformation, a greedy and intemperate person becomes afflicted with disease and weakness of the sense-organs, and ultimately meets with his doom.

Anything, which being taken enrages or agitates the bodily humours without causing the assimilated food (effete matter) to be evacuated out of the bowels, or is possessed of a taste contrary to, or other than what is necessary for the purposes of vitalization, should be looked upon as the primary source of all bodily distempers.

Diseases, brought about by a food or drink composed of incompatible substances, are amenable to the use of purgatives, emetics, or pacifying (corrective of the deranged humours) medicines ; and such a diet, even when found unavoidable, should be preceded by the use of drugs or substances potent enough to neutralise its baneful effect.*

A meat, in the composition of which substances of incompatible virtues and potencies largely enter, fails to develop any distressing or harmful symptoms in subjects who are habitually addicted to it, or who takes it in

* This couplet occurs also in the Charaka Samhitá.

small quantities, as well as in persons of youthful vigor and strong appetite, or in those who have become invigorated by the use of oily and albuminous food and healthful physical exercise.*

The effects of the winds :—Now we shall describe the effects of the winds on the body, (as they blow from the dfferent quarters of the heaven).

The East wind :—The East wind, which is cool and sweet in its potency, is heavy and charged with salt; it aggravates blood and Pittam and gives rise to an acid digestive reaction. It specially aggravates the disease in a patient suffering from a wound or an ulcer, or from the effect of any poison, and affects persons of Shleshmála temperament. It is highly efficacious to fatigued persons, as well as to those of a Vátalá (nervous) temperament, or who are afflicted with any sort of Kaphaja disease ; though it increases the slimy secretion in their ulcers if there be any.

The South wind :—The South wind is light, sweet (produces the same soothing effect on the organism like a thing of sweet taste) and is followed by an astringent after-taste (Anurasa) being antacid in its reaction. It is the best of winds, gives vigour to the eyes, increases the strength, and soothes the blood and the Pittam without aggravating the bodily Váyu.

* Different Reading—In a child or in a man of voracious appetite.

The West wind :—The West wind is pure, non-slimy, dry, rough to the perception, and keen. It absorbs the albumen or oily principle of the body. It absorbs or dries up fat and Kapham, produces a parched condition in the body when exposed to it, and speedily diminishes the strength of a person.

The North wind :—The North wind is cold, crisp, mild, of a sweet taste terminating in an astringent one. It does not in any way enrage or agitate the deranged bodily humours. In healthy subjects it increases the strength and the running secretions from the different orfices of the body (such as the nostrils etc.). It proves extremely salutary to patients suffering from consumption, cachexia and the effects of poison.

Thus ends the twentieth Chapter of the Sutrasthánam in the Sushruta samhitá which treats of salutary and nonsalutary effects of the regimen.

CHAPTER XXI.

Now we shall discuss the Chapter which investigates the nature of bodily humours, as exciting causes of ulcers **(Vrana-prashna-madhyayam).**

The Váyu, Pittam and Shleshmá should be considered as the primary and the most essential factors in the constitution of human organism. These fundamental and vital humours, occupying respectively the lower, middle, and upper parts of the body, maintain its integrity. The human body is supported by the three fundamental humours in the same way as a dwelling house is propped up by three supporting poles or stays; from which fact, the body is called the three-supported one (**Tristhunam**) by certain authorities. A deranged condition of these three fundamental humours may bring about its dissolution or death, while on their continuance in a normal state depends the vitality of the organism. These three humours, in combination with a fourth, the principle of blood, determine the origin, preservation, and dissolution of animated organism and permeate it with their respective properties till the moment of death.

Authoritative verse on the subject :—There can be no organism without Váyu, Pittam, Kapham and blood, which are necessary to

constantly maintain its integrity. The terms Váta (Váyu), Pittam and Shleshmá (Kapham) are respectively derived from the roots 'Vá', to move or smell, 'Tapa,' to burn or to heat, and "Shlisha," to embrace, with the suffix 'Ta' thereto added.*

Seats of the bodily humours :—Now we shall describe the locations of the foregoing vital humours. The Váyu may be briefly described as located in the regions of the pelvis (Shroni), and the rectum (Guda). The Pittam has its seat in the region between the stomach (Ámáshaya) and the intestines (Pakváshaya) which is above the pelvis and the rectum and below the umbilicus, while the Kapham is ensconced within the cavity of the stomach (Ámáshaya.)

Now we shall divide the locations of each of the vital humours into five parts :—The five localities of the Váyu will be described under the head of Váta-Vyádhis (nervous diseases), while those of Pittam are the liver and the spleen, the heart, the pupils of the eyes, the skin and the intestines (Pakváshaya). The Kapham is located in the region of the breast, the throat, the head, the joints and the stomach (Ámáshaya). The foregoing regions are the seats of the vital humours in their normal state.

* From this should be inferred that motion and smell are the natural attributes of the vital Váyu, heat and burning are those of Pittam, and union and integration are those of Kapham.

Metrical Texts :—The vital humours (Váyu, Pittam and Kapham) maintain the integrity of the animated organism by creating, assimilating and diffusing strength in the same way as the moon, the sun, and the winds maintain the integrity of the terrestrial globe.*

The Pittam :—Now it may be asked whether the Pittam is identical with the elemental fire, or is it something other than that ? The question may be answered by stating that the Pittam is the same as fire. Since such symptoms, as a burning sensation, digestion (boiling), and all other characteristics of fire can never exhibit themselves in the human body without the intervention of Pittam. Pittam therefore is called **internal fire**.†

Consequently, an enfeebled action of Pittam is remedied by the administration of drugs and substances which are akin to the elemental fire in their attributes, while an abnormal or excessive action (secretion) of Pittam is subdued by cooling measures as an over-kindled fire is subdued by moisture. There is no other fire (heat making factor) in the organism than Pittam.

* The moon laves the earth and imparts to it the vitalising principle with her own ambrosial light. The sun draws off the moisture in virtue of his own attractive force, and the Váyu distributes the heat and moisture over its surface.

† The analogy is based on the heating (and metabolic) actions of Pittam, and does not extend to its liquid secretion (bile). But since the former attributes permeate in its entirety, it is designated the **Internal fire**.

The Pa'chaka'gni :—By the ordination of fate or necessity (unfathomable natural cause), the Pittam, located in the region between the stomach (Ámáshaya) and the intestines (Pakváshaya), helps the digestion of the four kinds of food (such as drink and edibles etc.) partaken of by a living subject, and purges off the residue or impure morbiferous matter in the shape of urine and excreta after the completion of the process. Even thus located, it keeps up the temperature in its other distant locations (skin, etc.) in virtue of its native heat-giving attribute. Hence this Pittam is called the **Páchakágni** (digestive fire or heat) in an animated organism.

The Ranjaka'gni :—The function of the Pittam, which has its seats in the liver and the spleen, consists in imparting its characteristic pigment (Rágakrit) to the lymph-chyle and is hence known as **Ranjakágni** (lit :—dyeing fire or pigment bile.)

The Sa'dhaka'gni :—The Pittam seated in the heart is denominated as the **Sádhakágni** (performing or operating heat or fire) inasmuch as its action is to bring about the fruition or realisation of one's desires.

The A'lochaka'gni :—The Pittam, which is located in the pupils of the eyes, is called the **Álochakágni** (the Pittam or fire of sight) as its office is to

catch the image of any external object presented to the eyes.

The Bhrájakágni :—The Pittam, which has its seat in the skin, is called the **Bhrájakágni** (illuminating or irradiating heat) inasmuch as it absorbs the substances used in the shape of unguents, lubrications, etc. and irradiates the glow of one's natural complexion.

Metrical texts :—The Pittam is a keen, sharp and warm liquid, of a blue colour (in its normal state), or yellowish (in its deranged condition). It emits a kind of fleshy smell and is possessed of a pungent taste which is transformed into an acid one when deranged or vitiated.

Seats of Shleshmá (Kapham) :—Now we shall describe the locations of Kapham. The stomach (Ámáshaya), which is the seat of Kapham, occupies the same position as regards its location to that of Pittam as the sun holds in relation to that of the moon. And since the stomach (Ámáshaya) is situated above the pancreas (Pittáshaya), and is endowed with a property (cooling) contrary to the primary virtue (heating) of Pittam, and, since the heat emitted by the receptacle of Pittam is naturally radiated in an upward direction, the four kinds of food, brought in to the stomach (Ámáshaya), are boiled and transformed into a soft placid mass (chyme), like rice boiled in a bowl full of water placed over a

burning oven. The food, thus brought down into the stomach, is easily moistened, disintegrated and digested by coming into contact with the oily secretions of the stomach (Ámáshaya).

Metrical Texts :—The Kapham is originated through the sweet, slimy, watery, exudating character of the food brought into the stomach (Ámáshaya); and hence the Kapham becomes endued with similar attributes.

The Kledakam :—The Kapham, even though principally located in the stomach, permeates its four other distant localities with its peculiar watery or humid essence in virtue of its inherent attributes.

The Avalamvaka :—The Kapham, located in the region of the chest, protects the joints of the arms, the neck and the sternum, and enables the heart to perform its natural functions with the help of the lymph-chyle derived from the assimilated food and its own intrinsic potency.

The Vodhakam :—The Kapham, situated in the throat and at the root of the palate, lends its aid to the perception of tastes by maintaining the moist or humid character of the tongue.

The Tarpakam :—The Kapham, situated in the head, cools and bathes the different sense organs

with its own humid essence, in virtue of its natural humid attributes.

The Shlmeshakam :—The Kapham, situated in the joints, keeps them firmly united, protects their articulation and opposes their separation and disunion.

Metrical Texts :—The Kapham is white, heavy, oily, slimy and cool. In its normal state, it is possessed of a sweet taste, which is followed by a saline one in its reactionary transformation (chemical reaction) when deranged or vitiated.

Seats of blood :—The seats of blood are in the liver and the spleen, as stated before, whence it helps its other receptacles to serve their proper functions.

Metrical Texts :—The blood is red, oily or glossy, a little warm, and is possessed of an attribute similar to something of a sweet taste. It is heavy, and it emits a fleshy smell and resembles the Pittam in its reactionary process, or in other words, those factors, which derange the Pittam, vitiate the blood as well.

These are the locations of the deranged humours, which are respectively accumulated in them on account of the aforesaid causes. The deranged humours exhibit such symptoms as, fullness and stuffedness of the abdomen, or of any of the viscera (due to the action of the

deranged Vâyu ; yellowness of the affected part (due to the action of the deranged Pittam), and diminution of the bodily heat, heaviness of the limbs, and a sense of languor (due to the action of the diseased Kapham), and a natural repugnance for causes (factors) which lead to their respective aggravations or accumulations. The medical treatment should be commenced as soon as the symptoms, peculiar to their accumulation, would become manifest.

Humours and their aggravations :—Now we shall enumerate the causes which agitate and (aggravate) the deranged humours. The bodily **Váyu** is aggravated by such factors (conduct, practices and diet, etc.) as, wrestling with a wrestler of superior strength, violent gymnastic exercises, sexual excesses, excessive study, a headlong plunge into water or a leap from an inordinate height, running, a violent pressing blow, leaping over a ditch, a bounding gait, swimming, keeping of late hours, carrying of heavy loads, excessive riding, walking a long distance and the partaking of a food into the composition of which pungent, astringent, bitter, light or parchifying articles, or substances of cool potency, largely enter. Diets consisting of dried pot-herbs, Vallura, Varaka, Uddálaka, Karadusha, Shyámáka, Nivára, Mudga, Masura, Ádháki, Harenu, Kaláya, and Nishpâva tend to aggravate the bodily Váyu.

Fasting, unequal or irregular meals, over-eating, voluntary suppression of urine, semen, and tears, or of the mucous secretions from the nose as in a fluent coryza, a forced stoppage of defecation, eructation or sneezing are the factors, which may be set down as the aggravating causes of the bodily Váyu.

Metrical Text :—The bodily Váyu is naturally aggravated in a cold, cloudy or windy day, in winter, during the rains, in the morning and evening and especially at the close of digestion.

Symptoms of aggravated Pittam :—The Pittam is aggravated by anger, grief, fear, fatigue, fasting, acid transformation (reaction) of the assimilated food, or deficient gastric digestion, unnatural sexual indulgence, partaking of a food consisting of pungent, acid or saline, keen, heat making or light substances, as well as of those whose digestion is followed by a reactionary acidity. It is aggravated by the use of sesamum oil, or of sesamum paste. Kulattha, Sarshapa, Átashi, the pot-herbs known as Haritaka, fish, the flesh of a Godhá or a goat or mutton may lead to its aggravation, if taken injudiciously.

Similarly, the use of curd, whey, Kurchiká, (inspissated milk), Sauviraka, different kinds of wine, Amla-phala (sour fruits), or Katvara (curd mixed with oil) and excessive exposure to the sun, may be followed by the same consequences.

Metrical Texts :—In addition to all these, the Pittam is spontaneously and abnormally aggravated in summer, in autumn, at noon, at mid-night and during the process of digestion, as well as by the partaking of hot or warm substances.

Symptoms of the deranged Kapham :—The deranged Kapham is aggravated by sleep in the day time, or by the following of lazy or sedentary habits. The partaking of food, composed of substances which are heavy, slimy, sweet, acid or saline in their taste, or of one consisting of substances which increase the mucous secretions from the fissures of the body, may be likewise set down as aggravating factors. The use of food grains, which are called the Háyanaka, the Yavaka, the Naishadha, the Itcata, the Másha, the Mahámásha, the Godhuma, the Tilam, or of rice cakes may lead to its aggravation. Curd, milk, the Krishará, the Páyasha (sweetened rice porridge), the various preparations of cane-sugar are things which produce the same result. The flesh of beasts and birds that are aquatic in their habits or live in swampy lands, as well as lard, have the same effect, if used as food. The use of bulbs and lotus stems or of Kasheruka, Shringátaka, Madhura-phala, Valli-phala as well as eating before digestion or the partaking of food consisting of both wholesome and unwholesome substances may aggravate this bodily humour.

Metrical Texts :—The Kapham is naturally and spontaneously aggravated in the morning and evening, in Hemanta, and specially in Spring, and just after a meal. Likewise, it is aggravated by the use of cold food or drink, etc.

Symptoms of the aggravated blood:—[Owing to a natural similarity between blood and the Pittam, and through a natural affinity between their attributes], causes, which tend to aggravate the deranged Pittam, tend to aggravate or agitate the blood as well. Moreover, frequent meals or repeated use of food, into the composition of which cool, liquid and heavy substances largely enter, are followed by a disturbed or aggravated condition of the blood. Sleep in the day time, anger, exposure to the glare of the sun or fire, over-fatiguing labour, an external blow, ingestion of indigestible or incompatible substances, and eating before the full digestion of a previous meal, may as well be set down as causes which tend to aggravate blood.

Metrical Texts:—As the bodily humours are never aggravated independently of the blood, their aggravation goes together with a disturbed or agitated condition of the blood. The aggravated condition of the humours gives rise to pain and moves the wind (Váyu) in the bowels; it further occasions acid eructations, thirst, burning sensations, aversion to food, vomiting

and nausea. Any of these symptoms should be regarded as the **second occasion** which calls for medical aid.

Expansion of the deranged humours :—Now we shall describe the expansion (Prasaram) of the deranged humours. The deranged humours, aggravated by the above mentioned causes, expand and overflow the limits of their respective localities in the same manner as, cakes, soaked in any ferment or enzyme and kept standing over night, ferment and rise through the acquisition of new and unseen attributes. The Váyu, which is possessed of locomotion or extreme mobility, should be looked upon as the cause of their expansion or over-flowing. The Váyu, though an inanimate thing, in reality is possessed of the quality of "Rajas" (creative or cohesive energy), and the quality of the Rajas is the only essential or motive principle in the universe.

As a vast and mighty expanse of water, which has been divided into two expanses by a dam or barrier, will sweep away the latter and unite again to form one sheet of water ; so the deranged humours, sometimes singly, sometimes in combination with two or all of their species, or in unison with blood, expand and over-run the organism in all directions. As for example, the Váyu, the Pittam, the Kapham and the blood are singly expanded, whereas the bi-hu-

moural expansions involve the simultaneous overflow of the two deranged humours, or of any deranged humour and blood, as the Váyu and Pittam, Váyu and Kapham, Váyu and blood, Pittam and blood, and Kapham and blood. The tri-humoural expansions, which involve the blood and any two of the deranged and enraged humours, may be classified as the expansion, of (1) the Váyu, Pittam and blood, (2) the expansion of the Váyu, Kapham and blood, (3) the expansion of Pittam, Kapham and blood, (4) the expansion of Váyu, Pittam and Kapham, (5) the expansion of Pittam, Kapham and blood, the different types of expansion numbering fifteen in all.

Metrical Texts:—The aggravated, or the abnormally irritated deranged humours, whether permeating the whole or half of the system or restricted to any particular part or member of the body, give rise to disease in the place of their incarceration, like rain clouds pouring down in the quarter of the sky where they are formed. The deranged humours, not excessively (slightly) aggravated, lie inoperative coating the internal passages (Márgas) of the body and thus bring about a fresh disease, if subsequently agitated by any disturbing causes.

The deranged and aggravated Váyu, having moved into any specific seat of Pittam, should be medicinally treated as a case of Pittaja aggravation. Similarly, the

deranged and aggravated Pittam, or Kapham, changing their respective places with each other, should be medicinally treated as the humour in whose location it is found. The Váyu, thus aggravated and expanded, tends to deviate from its right passage and gives rise to a swelling or distention of the abdomen, accompanied by a rumbling sound in the intestines. The Pittam, under the similar condition, gives rise to heat, and a sort of sucking, burning pain in the affected part, together with a sensation of radiation or evaporation of heat from its surface. The Kapham, under the circumstance, would usher in a complete aversion to food, inertness of the limbs, vomiting and impaired digestion. The preceding symptoms, caused by the aggravation and expansion of the bodily humours, should be the **third occasion** for medical treatment.

Stha'na-Samshrayam :—Now we shall enumerate the names of the peculiar diseases, which are originated by the deranged and expanded humours, incarcerated in the different parts of the body. These humours, confined in the abdomen, give rise to Gulma abdominal glands) tumours, internal abscesses (Vidradhi), abdominal dropsy, impaired digestion in the bowels, constipation (Ánáha), cholera (Visuchiká) and dysentery.

Lodged in the bladder, these humours usher in Prameha (morbid urethral discharges), Ashmari (stone in

the bladder), Mutrakrichchhra (stricture of the urethra) and Mutrágháta (retention of urine), and diseases affecting the renal secretion, etc. Restricted to the penis they tend to bring in syphilis, Nirudha-prakásha (phymosis) and the local inflammatory diseases known as the Shuka-dosha, etc.

Similarly, lodged in the region of the anus, these deranged and expanded humours beget fistula in ano, hæmorrhoids and polypus growths about that locality. Confined in the region of the scrotum, they give rise to hydrocele and other types of scrotal tumours, etc. Restricted to the region above the clavicles, these humours originate diseases peculiar to that locality, while erysipelas, cutaneous affections (Kushtha) and other minor diseases supervene, when they restrict themselves to the flesh and the skin (lymph-chyle) and blood. Affecting only the fat, these humours tend to originate Granthi (Aneurism), Apachi (scrofula), Arvuda (tumour), Galaganda (goitre) and Alaji (inflammation of the eye at the edge of the cornea).*

Lodged in the lower extremities, they bring on elephantisis, Váta-Rakta (a kind of leprosy), Váta-Kantaka, etc. Permeating the whole organism, they give rise to such diseases as fever, Sarvángaroga, etc. which invade the entire system.

* **Additional text:**—Reaching down and confined in the bone-systems of the body, they produce Vidradhi (abscesses), Anushayi, etc.

The aggravated and expanded humours, thus firmly ensconced in the different parts of the body, exhibit the premonitory symptoms of diseases which will be fully dealt with under their respective heads. The manifestation of these premonitory symptoms should be considered as the **fourth occasion** for medical treatment.

Disease-Its Development :—Now we shall deal with the full development or manifestation of a disease.The full manifestation of a disease, such as a swelling, tumour, aneurism (Granthi), Vidradhi (abscess) and erysipelas (Visarpa) etc., fever or dysentery, signifies the complete development of the characteristic symptoms, which should be regarded as the **fifth occasion** for medical treatment.

The **sixth occasion** for the calling in of medical aid should be considered to have arisen when a swelling (abscess, tumour, etc.) would burst and exhibit the characteristic symptoms of an open ulcer. A persistent lingering or continuance of a fever or dysentery, etc., should be considered as marking, or forming one of its particular stages, and which may run into one of an incurable type, if neglected or not sufficiently cared for at the outset.

Authoritative verse on the subject:—The physician, who fully knows about the accumula-

tion (Sanchaya), disturbance or aggravation (Prakopa), expansion (Prasaram), and differentiating traits of the deranged humours (Bheda), and is well conversant with the specific localities in which they are respectively confined in the course of their expansion (Sthána-samshrayam), and with the symptoms which they respectively exhibit in connection with the incidental disease (Vyakti), is alone worthy of that epithet.

The deranged humours, checked or subdued in their accumulating stage, fail to exhibit any further or subsequent development, but, if left unremedied, they gain in strength and intensity in the course of their further development. The humours, deranged either singly, or in couples, or in a triple combination as regards one or two of their virtues, push on, follow and blend with humours similarly deranged as regards their qualities and combinative numbers.

The medical treatment in a case, where two or all (three) of the deranged humours are involved, consists in conquering the strongest one in the combination, but so as not to enrage or aggravate the minor or the weaker humours in the group and specially so in a case of Sannipáta.*

* The combination of any two of the bodily humours with the vitiated blood may likewise be interpreted to signify a Sánnipátika (trihumoural) combination.

A concourse of deranged humours, affecting and appearing in a particular part of the body, is called a boil or an ulcer (Vrana) which "is derived from the root "Vri" to cover and is so called from the fact of its covering a particular part of the body or from its leaving a cicatrix which remains the whole life-time of the patient.

Thus ends the twenty-first chapter of the Sutrasthánam in the Sushruta Samhitá which treats of investigation into the nature of the humours giving rise to an ulcer.

CHAPTER XXII.

Now we shall discuss the chapter, which treats of secretions from boils or ulcers of different types. **(Vranasrava-Vijnaniaya-madhyayam).**

A boil or an ulcer has its seat generally in one of the eight following components or principles of the body such as, the bone, the skin, the flesh, the veins, the ligaments, the joints, the viscera and the Marmas (vital parts of the body). A boil or an ulcer of any type may crop up or appear in any one of the above mentioned localities.

A boil or an ulcer, which is confined only to the skin, readily yields to medical treatment, while the remaining types, as well as those, which spontaneously suppurate and burst, are hard to cure. A boil or an ulcer usually assumes a shape which is either diffused, rectangular, spheroidal or triangular; while those, which are irregular or indefinite in shape, (or have forms other than the preceding ones, should be looked upon as belonging to types which can be cured only with the utmost difficulty. Any Vrana (burst or incised abscess) in a patient, who observes a strict regimen, and who, from the outset, is placed under the medical treatment of an experienced physician (surgeon), will be speedily healed; while an ulcer, affecting a person of

irregular habits and treated by a quack or an ignorant physician, will develop into one of a malignant type, which can be healed only with the greatest difficulty, on account of it becoming aggravated by the deranged bodily humours involved therein.

Symptoms of Dushta-Vranas :—Malignant ulcers (Dushta Vranas) are known by the following indications :—They are either too narrow or too wide-mouthed. They feel either extremely hard or soft to the touch and present either a raised (elevated) or a depressed aspect. They are of either a black or red, yellow or white colour, and are characterised by extremes of temperature. Exhibiting strange and unusual features, they are checkered with networks of veins, ligaments, etc., and are filled with putrid and sloughing flesh and fetid pus. Indefinite and irregular in shape, they are found to exude a sort of dirty, fetid pus, which runs into fissures and cavities, following an oblique or upward course. They have a cadaverous look and smell and are characterised by extreme pain and burning sensation, attended with swelling, redness, itching and suppuration. Pustules crop up round these ulcers, which largely secrete vitiated blood, and linger unhealed for an inordinate length of time.

These ulcers may be divided into six classes [according as, they are severally caused by the deranged bodily humours (Váyu, Pittam and Kapham), or are

due to their concerted action (Sannipáta), or to the effects of a blow (traumatic) or to vitiated blood.], and should be medically treated according to the nature of their respective exciting factors.

Secretions from ulcers :—Now we shall describe the characteristic secretions from all types of ulcers. Secretions from a contused or lacerated skin, as well as from an ulcer (confined only to it), whether spontaneously bursting or surgically opened, are thin and watery in their consistency. They are characterised by a raw (fleshy) smell and a yellowish colour. An ulcer, affecting the flesh, exudes a slimy, thick and white secretion like clarified-butter. A copious quantity of blood flows out of a vein recently cut, while the incidental ulcer, in its suppurating stage, secretes a copious secretion, like water flowing out of a hydrant, which is moreover detached, thin, pendent (ropy), and slimy in its character and has a brown or frosty hue. An ulcer, confined only to a ligament, secretes a sort of cold and thick secretion, like expectorated mucous, though sometimes marked with streaks of blood.

A bone, injured, fractured, or suddenly cracked by idiopathic causes (derangement of the bodily humours), loses its internal marrow and appears as if washed (loses its natural gloss). It assumes the colour of an oyster shell, whereas the secretions from an ulcer, which is seated in

a bone, are cold and marked by streaks of blood and lumps of marrow. An ulcer, situated in any of the bone-joints, does not exude any secretion under pressure, but secretes a sort of slimy, pendent, frothy and blood-streaked pus, when the affected limb or part is flexed, expanded, raised or lowered, as in running (moving about), sitting or standing erect, or at defecation.

An ulcer, seated in the abdominal cavity (Koshtha), exudes a secretion, which is mixed with urine, fecal matter, pus or blood, and a thin or watery (serous) fluid. The secretions from an ulcer, affecting any vital part of the body, need not be separately described, as such a part naturally involves the organic principles of skin, flesh, etc.; and hence an ulcer, invading it, must necessarily exude a secretion, which is peculiar to any of the aforesaid bodily principles (skin, flesh, etc.) that has become affected.

The deranged Váyu makes the secretions from an ulcer, seated in any of the seven abovesaid principles such as, the skin, flesh, veins, ligaments, bones, joints and the abdomen, respectively coarse, and rough to the touch, brown, grey, frosty, or white like the cream of curd, and coloured like the washings of an alkali, like that of meat or paddy husks. Similarly, the action of the deranged Pittam should be inferred from the secretions assuming the colours of a Gomedha (a species of bluish yellow agate), or that of the urine of

a cow, or that of water saturated with the burnt ashes of conch-shells or that of Kasháya water or that of the wine known as the Mádhvika or that of oil, according as the skin, flesh, etc. are respectively affected. The action of the deranged blood, in changing the nature of the secretions of ulcers in the seven abovesaid locations, is identical with that of the deranged Pittam with the exception, that the secretions are characterised by an extremely fishy smell.

In an epidermic (confined only to the epidermis of a part) or superficial ulcer the action of the deranged Kapham manifests itself by imparting a butter-like or a Kásisha (sulphate of iron) colour to the secretions. They have lard-like hue or a colour like that of rice paste, or that of water tinged with sesamum, or a colour like that of the internal juice or water of a cocoanut, or a colour like that of hog's lard, according as the flesh, a vein, a ligament, a bone or a joint is attacked. On the other hand, through the combined action of all the three deranged humours of the body (Sannipáta), those secretions become coloured like the water tinged with the soakings of sesamum seeds, or the internal sap or water of a cocoanut, or the juice of the Ervároka or the transparent surface layer of rice gruel, or the washings of the Aruka fruit, or the water tinged with the fruits of the Priyángu, or like the liver or the Mudga pulse.

Authoritative verses on the subject :—An ulcer, situated in the cavity of the abdomen and secreting an exudation resembling paddy husks in colour, as well as one located in the viscera of blood (spleen or liver—Raktáshayam) and exuding a secretion like alkaline water, should be deemed incurable. Similarly, an ulcer having its seat in the cavity of the stomach (Amáshaya), or in the region of the Trika, (articulation of the clavicle with the intraclavicular notch) and exuding a thin, watery secretion, coloured like the washings of Kaláya pulse, should be regarded as belonging to the same type (incurable). A physician should only take in hand the treatment of an ulcer-patient after having examined the abovesaid nature of the discharges.

Pain and its character :—Now we shall describe all the different kinds of pain, which are experienced in the several types of Vrana (ulcers) described before.

Va'taja pain :—Pains of pricking, piercing, thrashing, cutting, expanding, gnawing, churning, shooting, tingling, burning, breaking, bursting, pinching, uprooting, uplifting, quivering, aching of different types, shifting, stuffing, benumbing, indurating, contracting, and pains of a spasmodic character are usually felt in ulcers. A pain, which comes on or vanishes without any apparent cause, or is varied and shifting

in its character, should be ascribed to the effects of the deranged Váyu.

Pittaja pain :—A sensation of burning is felt in the ulcer accompanied by a sort of sucking pain. A feeling of inhaling heat or vapour, and a burning sensation running through the whole body, should be looked upon as the resultant of the deranged Pittam. At the same time the body seems as if it had been strewn over with bits of glowing charcoal. The heat or (the temperature of the affected locality) shows a steady rise, and a pain like the one incidental to the application of alkaline water (caustic solution) is experienced in the ulcer.

Raktaja pain :—The pain and other specific features of an ulcer due to the vitiated condition of the blood are identical with those developed by one of the Pittaja type.

Kaphaja pain :—An ulcer, characterised by numbness, heaviness, coldness, itching and a slight pain in the affected part, and which seems as if it has been plastered over with a paste, and which proves insensible to touch, should be ascribed to the action of the deranged Kapham.

Sannipátika pain :—The symptoms, described under the head of each of the preceding humoural types of ulcer, simultaneously exhibit

themselves in the one brought about by the concerted action of all the deranged humours (Sannipátikam).

Colours of Vranas :—Now we shall decribe the colours assumed by the several types of ulcers. An ulcer, due to the action of the deranged Váyu, is rough and black, red, or ash-coloured, or is of the colour of a bone, or a pigeon. An ulcer, caused by the action of the deranged blood or Pittam, is coloured either blue, yellow, greenish-brown, black, reddish-tawny or flame-coloured. An ulcer due to the action of the deranged Kapham is white, grey and glossy. An ulcer, due to the combined action of the three deranged bodily humours, may assume any colour peculiar to them.

Authoritative verses on the subject :—Not only in the cases of Vrana, but in all (inflammatory) swellings of whatsoever type, the physician should carefully observe the nature of the local pain, and the colour of the epidermis.

Thus ends the twenty-second Chapter of the Sutrasthánam in the Sushruta Samhitá which treats of secretion from different types of ulcers.

CHAPTER XXIII.

Now we shall discuss the chapter which deals with the Prognosis of an ulcer **(Krityákritya-Vidhi-madhyáyam).**

A boil or an ulcer appearing in a patient who is young, muscular (in frame), strong, or is possessed of an indomitable courage and fortitude, proves readily amenable to healing measures and applications ; how much more so when one appears in a patient in whom all these four conditions simultaneously obtain.

An ulcer in a young patient is speedily healed owing to the fresh and vigorous vitalizing principles of the body ; whereas the one, which appears in a person of strong and muscular build, finds a speedy and successful termination owing to the inability of the incising instrument to cut deep into the hard and tough muscles of the affected part and to reach down, or in any way destroy the underlying veins and nerves, etc. A strong and vigorous patient can easily endure a considerable amount of burning pain, etc. and does not feel distressed by a strict regimen of diet. A man of stupendous endurance and fortitude can sustain the fatigue and worry of even the most painful surgical operation. Accordingly, a boil or an ulcer, appearing in a patient of the above said description, is easily and speedily healed ;

whereas the one, which affects either an old, emaciated, or timid person or one of small strength and endurance, takes time to heal.

Boils or ulcers, which appear in the regions of the buttocks (Sphik), or about the anus, and the organs of of generation, or on the back, forehead, cheek, or lips, or in the region of the external ears, or on the testes or the abdomen, or in the cavity of the mouth, or about the nape of the neck, or above the clavicles, can be easily healed. Those, that are seated in the eyes, or in the gums, the nostrils or the exterior angle of the eye, or in the cavity of the ears, abdomen or the umbilicus, or about any suture of the body, hips, ribs, arm-pits, chest, breasts, sides, or the joints, as well as those, that secrete frothy blood or pus with a gurgling sound, or contain any foreign matter embedded in their inside, are healed only with the greatest difficulty.

Similarly, an abscess or an ulcer appearing in the nether region of the body and pointing upward, or the one appearing on the extremity of scalp (Románta) or about the end of a finger-nail, or in any of the vulnerable parts of the body, as well as the one affecting either of the thigh bones (femurs), should be looked upon as equally hard to cure. Likewise an abscess or an ulcer affecting a bone of the pelvis (Shronikanda-Acetabulum), as well as a fistula

in ano opening inward should be regarded as hard to cure.

Authoritative verse on the subject :—An ulcer (Vrana) appearing in a leper (Kushthi) or in a person suffering from diabetes (Madhumeha), or from Shosha (lit : pulmonary-consumption) or from the effects of poison, as well as the one appearing in a pre-existing ulcer, should be looked upon as curable only with the greatest difficulty.

Ya'pya ulcers :—An ulcer incidental to, and affecting the seat of any of the following diseases, viz. Avapáthiká (paraphimosis), or Niruddha-Prakásh (phimosis), or Sanniruddha-guda (constriction of the anus), or Jathara abdominal-dropsy), or Granthi (glandular inflammation), and characterised by the germination of parasites in its interior, as well as the one appearing in the cavity of the abdomen, or affecting the mucous linings of the intestines, or brought about by the corrosive secretions of a nasal catarrh (Pratishyáya), and infested with parasites, should be considered as only admitting of a palliative treatment. Similarly palliation is the only remedy in the case of an ulcer which appears in a patient suffering from any morbid secretion from the urethra (Prameha) or from any form of cutaneous affections, marked by worms in its inside.

Likewise a case of gravel (Sharkará), or urinary

calculi (Shikatá) in which the urine is found to be charged with concretions, or leaves a deposit of sandy sediment, can not be radically cured by medicine alone. A case of Váta-kundaliká, Asthilá, Upakusha, Kantha-sáluka, Danta-sharkará, Danta-veshta, Visarpa, Asthi-kshata, Uru-kshata, or Vrana-Granthi, may not perfectly yield to medicine alone. In an inflammation of the gums resulting from the use of poisonous twigs as brushes for teeth (Nishkoshana) a temporary amelioration is all that can be expected from a good and efficient treatment.

Metrical texts :—In a patient neglecting a disease at its preliminary stage, (or otherwise not observing a strict regimen) even a curable malady may speedily develop into one which admits only of palliative measures, while a disease of the last named type is soon transformed into an incurable one. An incurable disease under the circumstances speedily finds a fatal termination. A patient laid up with a disease, which only admits of a palliative treatment, lives so long as the course of the medical treatment is continued, and will die almost simultaneously with its discontinuance. Just as a prop or a pillar can prevent the collapse of a tumbling edifice, so palliative measures, judiciously applied by a skilful physician, may keep off the inevitable in a disease which knows no radical cure.

Incurable diseases :—Now we shall de-

scribe the types of diseases which are usually held as incurable. An ulcer (Vrana) cropping up like a fleshy tumour, painful and containing pus in its inside, and which is characterised by a copious secretion, with its edges raised like those of the genital of a mare, should be understood as belonging to the incurable type. A condylomatous (papillomatous) ulcer which is soft and raised like the horn of a cow, or the one which is moderately raised or elevated at its base, and secretes an exudation of vitiated blood, or a thin slimy secretion, should be likewise regarded as incurable. An ulcer with an embossed or heaved up centre, and one dipped or fissured at its extremity should be regarded as past all remedy. An ulcer covered over with shreds of ligaments, and looking as if studded with loose shreds of hemp, should be given up as incurable. Similarly, an ulcer due to the deranged condition of any of the fundamental humours, and secreting an exudation composed of coagulated blood, fat, marrow and brain-matter should be deemed incurable.

Likewise, an ulcer, in a weak and emaciated person, which is located within the cavity of the abdomen, (Koshtha) and which assumes either a black or yellowish colour, and exudes a secretion composed of urine, pus, blood and fecal matter, which finds its outlet both through the upward and downward fissures of the body (the mouth and the anus) making a rumbling, gurgling

sound, or which simultaneously secretes pus and blood through both the channels, should be regarded as belonging to the incurable class. An ulcer in an emaciated patient, which is situated either on the head or in the throat, and which is narrow-mouthed and is traversed by a network of capillaries, and studded with fleshy or papillomatous eruptions, should be regarded as incurable. A distinctly audible sound or report is heard in these ulcers which are found to be charged with wind.

An ulcer in an emaciated patient, which secretes blood and pus, and is attended with indigestion, cough, painful respiration and non-relish for food, as well as a case of fractured skull, attended with cough, dyspnœa, secretion of brain-matter, and symptoms peculiar to the concerted action of the three deranged humours of the body, should be given up as past all remedy.

Authoritative verses on the subject :—A traumatic ulcer, which exudes a secretion of fat, marrow or brain-matter, may prove amenable to medical treatment, whereas a humoural ulcer under the circumstance will prove incurable.

An ulcer appearing at any part of the body other than a vital one (Marma), and which is found to invade its successive elements though without affecting any vein, bone, joint, etc. should be regarded as incurable.

Just as a tree, that has grown old and that has spread its roots deep into the soil, can not be uprooted, so a disease can not be eradicated that has gained in strength and maturity with the process of time, and that has gradually invaded the different essential principles of the body. A disease, which, having been neglected at the outset, has run on to one of a lingering or persistent type by invading the successive elements of the body, and has thereby gained in strength and intensity, baffles medicines, (of tested and marked efficacy), just as malignant astral combinations tend to nullify potent incantations.

Symptoms of cleansed healthy ulcers :—An ulcer, not belonging to any of the above said types, may prove easily amenable to the curative efficacies of medicines. In other words, an ulcer of recent origin is easily uprooted like a tender sapling of recent growth. An ulcer, which is unaffected by any of the three deranged bodily humours, and which assumes a dark brown hue along its edges, and is characterised by the absence of any pain, pustular eruptions or secretions, and which is of an even or of an equal elevation throughout its length, should be regarded as cleansed (asepsised or healthy), and divested of all morbid matter or principle (**Shuddha-Vrana**).

Symptoms of Healing Ulcers :—An ulcer, which is dove-coloured (yellowish dusky), and is

not lardaceous at its base, and is further characterised by the absence of any muco-purulent secretion along its margin, and which has become hard and surrounded by shreds of dead skin, and presents symptoms of healthy granulation, should be looked upon as in course of healing.

Symptoms of Healed Ulcers:—An ulcer, with its edges firmly adhered and characterised by the absence of any pain and swelling and not appearing knotty or glandular to the touch and that has left a cicatrix of the same hue with the surrounding skin, should be considered as perfectly healed.

Causes, such as mental excitements, as excessive grief and ecstacies of joy, anger or fright, as well as an external blow, or excessive physical exercise, or an abnormal excitation of any of the deranged humours, or an impaired digestion, may tend to reopen an ulcer recently adhered and healed. Accordingly such acts and conditions should be avoided by an ulcer-patient.

Thus ends the twenty-third Chapter of the Sutrasthánam in the Sushruta Samhitá, which treats of the prognosis of ulcers.

CHAPTER XXIV.

Now we shall discourse on the Chapter, which deals with the classification of diseases according to their specific nature **(Vyadhi-Samuddheshiya-madhyayam).**

Diseases may be grouped under two broad subdivisions, such as Surgical, and Medical, that is those that yield to the administration of purgatives, emetics, oils, diaphoretics, and unguents.

The use or administration of medicated oils and unguents, etc., is not prohibited in a surgical disease, while a case, which is exclusively medicinal in its character, does not admit of the adoption of any surgical remedy. Only a general outline of the nature and symptoms of all diseases will be found to have been briefly laid down in the present work. This work includes within its scope subject matters which have been fully dealt with in other books (having only a general bearing upon all the several branches of the science of medicine).

It has been stated before that anything that afflicts either the body or the living personality—self, or both, is called disease. This pain or affliction

may be either physical* in its character (Ádhyát-mikam), or due to any disturbance in the physical environments of a man (Ádhibhautikam), or to the acts of God (Ádhidaivikam) etc. This three-fold pain may be ultimately transformed into any of the seven kinds of diseases such as, the Ádi-vala-pravritta, Janma-vala-pravritta, Dosha-vala-pravritta, Sanghata-vala-pravritta, Kála-vala-pravritta, Daiva-vala-pravritta and Svabháva-vala-pravritta.

A'di-vala-pravritta :—The disease termed Adi-vala-pravritta is ascribed to any inherent defect in the semen or the ovum of one's parent, which forms one of the original and primary factors of "being" and includes leprosy (Kushtham), hemorrhoids, phthisis etc. This type may be divided into two sub-divisions, according as the disease is generated by the deranged paternal or maternal factor at the time of incubation.

Janma-vala-pravritta :—The Congenital or the **Janma-vala-pravritta** type usually follows such causes as an improper conduct on the part of the mother during the period of gestation, etc., and embraces such defects or maladies as (congenital) blindness, deafness, dumbness, nasal-voice, and such monstrous aberrations of nature as congenital cretinism,

* Certain commentators interpret the term "A'tman" in "A'dhyátmikam" to mean body only, and accordingly designate all phenomena that may be manifest in the body as A'dhyátmikam.

and the births of dwarfs and pigmies. This type, in its turn, admits of two sub-divisions, according as the disease is due to the action of the deranged lymph-chyle (Rasa-krita), or to an ungratified desire of the mother during gestation, or to her gratification of any improper longing or conduct during pregnancy (Dauhridyam).

Dosha-vala-pravritta :—The Dosha-vala-pravritta (idiopathic) type is due to the action of any of the fundamental bodily humours deranged by an improper diet, or resulting from the dynamical energies of the mind, such as (Rajas and Tamas, etc). This type may be classified under two sub-heads, according as the disease is found to have its origin in the Ámáshaya (stomach), or in the Pakváshaya (intestines), and each of these again may be further divided into two main sub-divisions such as the physical and the mental. The three preceding kinds of diseases include within their category disorders which are called mental or psychical (**Ádhyátmikam**).

Samghata-vala-Pravritta :—The Traumatic type (Samghátha-vala-pravritta) includes diseases that are caused by an external blow or are due to wrestling with an antagonist of superior strength. They may be sub-divided into minor divisions, according as the disease is due to an external wound, or to the bite from any fierce beast or

poisonous reptile, etc. These types belong to the Ádhibhautikam type, i. e. (brought about by physical causes).

Ka'la-vala-pravritta :—The Periodical type (Kála-vala-pravritta) includes diseases that are brought about by the variation of atmospheric heat or humidity with the change of the seasons, and admits of being grouped under two different sub-heads, according as the seasons, which usher these changes in, exhibit natural or contrary features.

Daiva-vala-pravritta :—The Providential (Daiva-vala-pravritta) type includes diseases that are the embodiments of curses, divine wrath or displeasure, or are brought about through the mystic potencies of charms and spells, as described in the Atharva-Veda. This type may be divided into two minor divisions according as the disease is due to such acts of God as when a man is struck by lightning, etc., or to the malignant influences of demons and monsters, and these may be further grouped under two main sub-heads, according as the disease assumes a contagious character (epidemic), or is purely accidental, and restricts itself to isolated cases (sporadic).

Svabha'va-vala-pravritta :—The Natural or the Spontaneous (Svabháva-vala-pravritta) type includes such natural organic phenomena as,

decrepitude, death,* hunger, thirst, sleep, etc. These phenomena are either Kálakrita (timely) or Akálakrita (untimely). They are called Kálakrita when they occur at the proper time in persons who strictly observe the rules of health, and Akálakrita, when they appear at the improper time (morbid or premature) as the effects of unhealthy living. These diseases belong to the Providential or **Ádhi-daivikam** type†. Thus we have classified diseases into their several types.

The deranged bodily humours such as, Váyu, Pittam and Kapham should be looked upon as the primary sources of all diseases, inasmuch as symptoms characteristic of each of them may be detected in the case of a disease of whatsoever type, (which usually abates with their corresponding subsidence), and also because the Shástras have ascribed to them the fatherhood of all maladies that assail the human frame.

As the three qualities of **Sattva**, Rajas and **Tamas**‡ are inherent in, and inseparable from, all the phenomenal appearances in the universe which are, in reality,

* According to certain authorities "Death" may also mean death of tissues.

† Several authorities on the other hand include such diseases as thirst, hunger etc., within the A'dhyátmika class inasmuch as they are but the indications of the want of certain vital principles in the body and appear in the mental plane (A'dhyátmika) only as longings for water, food, etc

‡ The **Sattva** :—Illuminating or psychic principle. **Rajas** :—Principle of Action and Co-hesion. **Tamas** :—Principle of Nescience or Illusion.

but modifications of their own qualities, so the three fundamental bodily humours underlie at the root of, and run through, the course of all known forms of bodily distemper.

The deranged bodily humours (Dosha) in contact with the different elements, (Dháthu) and excrements (Mala) of the body, together with the difference of their locations and pathological effects, give rise to the different forms of disease.*

The nomenclature of a disease depends upon where the affection of the several elementary principles of the body by the deranged bodily humours lies, and which is accordingly styled as it is seated in the lymph-chyle, or in the blood or the flesh, or it is in fat, bone, or in the semen.

Rasaja Distempers :—Distempers such as aversion to, and loss of relish for food, indigestion, aching in the limbs, fever, nausea and a sense of repletion even without food, heaviness of the limbs, diseases affecting the heart, jaundice, constriction of any internal passage of the body (Márgo-parodha), emaciation of the body (cachexia), bad taste in the mouth, weak feelings in the limbs, premature whiteness and falling off of the hair, and symptoms indicative of senile decay, should be regarded as having their seat in the deranged lymph-chyle (Rasa).

* This answers the question, "how can the deranged bodily humours bring about a disease of the Adhi-vala-type—a disease which is specifically due to the derangement of the innate and primary factors of life."

Raktaja Diseases :—Maladies such as Kushtha (cutaneous affections in general), Visarpa (erysipelas), Pidaká (pustular eruptions), Mashaka, Niliká, Tilakálaka (specks), Nachhya (tans), Vyánga (stains), Indralupta (alopecia), enlarged-spleen, Vidradhi (abscess), Gulma (abdominal glands), Váta-shonita (a kind of leprosy), Arsha (piles), Arvuda (tumours), aching of the limbs, menorrhagia, hæmoptysis, etc. as well as suppuration in the regions of the anus and the penis should be deemed as having their origin in the blood (Raktaja) contaminated by the deranged bodily humours.

Mánsaja-Diseases :—Similarly Adhi-mánsa, Arvuda, Arsha, Adhi-jihvá, Upa-jihva, Upakusha, Gala-sunthika, Alaji, Mánsha-sangháta (condylomatous growth), Astha-prakopa, Gala-ganda, Ganda-málá (scrofula), etc. should be regarded as diseases having their seat in the flesh, vitiated by the deranged bodily humours.

Medaja-Distempers :—Diseases, such as Granthi, Vriddhi, Gala-ganda, Arvuda, and Ostha-prakopa are due to the action of the deranged fat. Madhu-meha (diabetes), obesity and abnormal diaphoresis, etc. should be regarded as having their origin in the humour-deranged fat of the body.

Asthija-Disease :—Adhyásthi, Adhi-danta, Asthi-toda, Asthi-shula and Ku-nakha, etc. are the

diseases which should be regarded as the outcome of the deranged bodily humours affecting the bones.

Majjadoshaja Diseases :—The vanishing of sight, epilepsy, vertigo, conjunctivitis and the appearance of a broad-based ulcer about the Parvasthánam and a sense of heaviness in the thighs and knee-joints should be regarded as having their seat in the deranged marrow.

Shukra-doshaja :—Diseases such as, impotency, entire aversion to sexual intercourse, Shukráshmari (seminal concretions), Spermatorrhœa, and other seminal affections, should be regarded as having their seat in the deranged semen.

Cutaneous affections, constipation or looseness of the bowels, and diseases impeding or arresting the proper functions of the sense-organs or in any way bringing about their aberrations, should be regarded as respectively located in the receptacle of the fæces and the sense organs.

Thus we have briefly enumerated the names of diseases, the specific nature and symptoms of which will be fully discussed later on under their respective heads.

Authoritative verse on the Subject :—The deranged and aggravated humours, freely coursing through the body, give rise to a disease at the

place in which they are incarcerated owing to an obstruction in their natural passage.

Now it may be again asked, whether the relation of a disease, such as fever, etc. with the deranged bodily humours is constant and inseparable, or otherwise. All human beings would be in danger of perpetually falling ill in the event of the said connection (relation) being constant and unseparable ; but in case of their separate existence, it is but natural that their characterstic symptoms should separately manifest themselves instead of being simultaneously present with fever, etc. as they are found to be in reality. And accordingly the theory, that diseases (such as, fever, etc.) and the deranged bodily humours have a separate existence, and are not *prima facie* intimately co-related with one another falls to the ground. On the other hand, the assumption of their separate existence invalidates the incontestable conclusion, that diseases such as, fever, etc. are fathered by the deranged humours of the body.

Hence it may be safely asserted that no disease can occur without the direct mediation or intervention of the deranged bodily humours. Yet the connection (relation) which exists between the two is neither constant nor separable. As the physical phenomena of lightning, storm, thunder and rain can not happen independently of the sky (cloud); and yet they

sometimes do or do not occur with the presence of a cloud ; again as bubbles, though in reality but the modifications of the underlying water, do not swell up on its surface at all times, so the connection between a disease and the bodily humours is neither universally separable or inseparable.

Authoritative verse on the subject :—We shall describe the nature, intensity and quality of diseases with their complications and give the number of their different types. Diseases [omitted to be mentioned in the chapter on Nidánam (ætiology)] will be found fully dealt with in the supplementary part of the present work (**Uttara-tantram**).

Thus ends the twenty-fourth Chapter of the Sutrasthánam in the Sushruta Samhitá which treats of the classification of diseases according to their specific nature.

CHAPTER XXV.

Now we shall discourse on the Chapter which deals with the eight different forms of surgical operations **(Ashtavidha-Shastra- Karmanya - madhyayam).**

Metrical Texts :—Bhagandara, Shlaishmika Granthi, Tilakálaka, Arvuda, Arsha, Charma-Kila, Jatumani, Mánsa-Samgháta, Gala-Sunthiká, Valmika, Vrana-Vartma, Shataponaka, Adhrusha, Upadansha, Mánsakandha, Adhimánsaka, as well as ailments due to the lodgment of a foreign body in the flesh or a bone, and a sloughing of ligaments, flesh or veins are the diseases in which incision (Chhedyam) should be made.

Bhedyam : – Excision (Bhedyam) should be resorted to in the following diseases, viz., Vidradhis, the three types of Granthi other than the Sánnipátika one, Visarpa due either to the deranged Váyu, Pittam or Kapham, Vriddhi, Vidáriká, Prameha-pidaká, swellings in general, diseases affecting the mammary organs, Avamanthaka, Kumbhiká, Anushayi, Nádi, the two types of Vrinda, Pushkarika, Alaji, Kshudra-roga (all minor cutaneous or pustular diseases), the three types of Puppata, Tálu-puppata, and Danta-puppata; Tundukeri, Giláyu, and the diseases which are caused by suppuration in the local flesh or any soft part of the

body (such as fistula in ano), as well as stone in the bladder and diseases due to a derangement of fat.*

Lekhyam :—The surgical operation known as scarification (**Lekhya**) should be resorted to in the following diseases, viz, the four types of Rohini, Kilása, Upajihvá, diseases having their seat in the deranged fat, Danta-Vaidarbha, Granthi, Vrana-Vartma, Adhi-Jihvá, Arshah, Mandala, Mánsa-kandi, and Mánsonnati.

Vyadhanam :—The Surgical operation known as Vyadhanam (aspiration) should be made use of in connection with a vein, or a case of Dakodaram (abdominal dropsy), or Mutra-Vriddhi (hydrocele). Diseases, in connection with which the probe or the director should be used, are Nádis (sinus) and ulcers with any extraneous or foreign body lodged in their inside, and those which follow abnormal (lateral or oblique) directions.

A'ha'ryam :—The process known as **Áháranam** (extraction or drawing out) should be adopted in the three types of Sharkará,† in drawing out any morbid matter from between the teeth or from the cavity of the ears, or in extracting any foreign matter from its seat of lodgment in the body, or a stone from the

* Granthi (gland), Galaganda (goitre), Vriddhi (scrotal tumour) Apachi (scrofula) and Arvuda (tumour) are the fat-origined diseases contemplated as instances.

† Such as urinary calculi, calcareous deposits on the teeth, and Páda-Sharkará.

bladder, or in drawing out feces from the constricted anus, or a fœtus from the uterus, (as in the case of a false presentation or difficult labour).

Srávyam :—Secreting or evacuating measures (Srávyam) should be adopted in the following diseases, *viz*, the five types of Vidradhi excepting the Sánnipátika one, Kustha of whatsoever type, derangement of the bodily Váyu with pain in the affected region, inflammatory swellings restricted to any particular part of the body, diseases affecting the ear-lobes, Shleepada (elephantiasis), blood poisoning, Arvuda (tumours), Visarpa (erysipelas), Granthi (glands due to any of the deranged Váyu, Pittam, or Kapham) the three types of Upadansha (syphilis), Stana-roga (inflammation of the mammæ), Vidârika, Shaushira, Gala-Sháluká, Kantaka, Krimi-dantaka (worm-eaten teeth), Danta-veshta (inflammation of the gums), Upakusha, Shitáda, Danta-puppata, diseases of the lips originated through the action of the deranged blood, Pittam or Kapham, and a variety of other diseases passing under the denomination of Kshudra-Roga (minor ailments).

Seevyam :—Suturing (**Seevya**) should be resorted to in the case of an open ulcer due to the action of the deranged fat after its vitiated contents (morbid matter) had been fully scraped out, as well as in the case of an uncomplicated (curable) Sadya-Vrana (wound or instant ulcer) at any of the joints

which are connected with the acts of movement or locomotion.

Conditions of Suturing:—An ulcer incidental to the application of fire (cautery), or any alkaline preparation (caustic), or treated with any poisonous drug or substance, or from whose inside the embedded Shalyam (foreign matter) has not been removed, should not be sewed up without being thoroughly cleansed and purified asepsised inasmuch as any foreign matter, whether a hair, nail or a particle of dust or bone, lying embedded in its cavity, might set up an abnormal suppuration, accompanied by extreme pain and excessive secretion. Hence such ulcers should be thoroughly cleansed (and all foreign or indigenous morbid matter should be extracted therefrom) before being sewed up.

Mode of Suturing:—Then having pressed the ulcer up into its proper position, it should be sutured with strings of any of the following kinds, *viz.* of thin cotton thread, of the fibres of the Ashmántaka tree or hemp plants, or of the Atasi, Murvá or Guduchi, or with strips of leather, plaited horsehair or animal sinews, into any of the officinal shapes (of suturing) known as the Gophaná, Tunna-Sevani and Riju-Granthi, etc. or as suited to the shape and position of the ulcerated part. The margin of the ulcer should be gently pressed close with the fingers during suturing. A round needle to

the length of two fingers' width should be used in sewing up an ulcer occurring about any joint or in a part of the body where the flesh is thin and scanty. A needle of a triangular body (tri-hedral), and measuring three fingers' width in length, is recommended in the case of an ulcer appearing at any fleshy part of the body. A semi-circular or bow-shaped needle should be used in a case where the seat of the ulcer would be found to be on the scrotum, or on the skin of the abdomen, or about any of the Marmas (vital parts).

Needles of these three shapes should be so constructed as to be fitted with sharp points capable of being handled with the greatest ease, having a girth equal that of the stem of a Málati flower.

The needle should not be pricked into a part too near, or too remote from the fissure, or the mouth of an ulcer, as there might be the danger of the suture being broken off (at the least pressure or movement) in the first instance and of genesis of pain in the second. An ulcer, thus properly sutured, should be covered over with cotton and dusted over with a pulverised compound consisting of the powders of Priyangu, Anjanam, Yasthyáhva and Rodhra, or with the ashes of a burnt piece of Kshauma cloth, or with the powders of the Shallaki fruit. Then the ulcer should be properly bandaged, and measures and rules regarding the regimen of diet, and conduct previously laid down in the chapter

on the nursing of an ulcer-patient (Ch. XIX.) should be adopted and observed.

The eight kinds of surgical operations have thus been briefly described. They will be dealt wlth later on in the Chikitsitam.

Defective Surgical Operations:—These eight forms of operations may be attended with dangers of four different kinds such as those arising from an insufficient or over performance, or from the slanting or oblique deviation (of the knife or the instrument), or from an act of self-injury on the part of the physician.

A physician (surgeon) making a wrong operation on the body of his patient either through mistake, or through the want of necessary skill or knowledge, or out of greed, fear, nervousness or haste, or in consequence of being spurned or abused, should be condemned as the direct cause of many new and unforeseen maladies. A patient, with any instinct of self-preservation, would do well to keep aloof from such a physician, or from one who makes a wrong or injudicious application of the cautery, and should shun his presence just as he would shun a conflagration or a cup of fatal poison.

On the other hand, a surgical operation, carried to excess, (or a surgical instrument inserted deeper than what is necessary), is attended with the danger of

cutting or destroying a vein, ligament, bone, joint, or any vital part of the body. A surgical operation by an ignorant surgeon brings about, in most cases, the instantaneous death of the patient, or consigns him to the pangs of a life-long death.

The symptoms which generally manifest themselves in connection with the injudicious hurting of any of the five vital parts or principles of the body (such as the joints, bones, veins, ligaments, etc.) are vertigo, delirium, loss of bodily functions, semi-insensibility (comatose state), incapacity of supporting oneself, cessation of mental functions, heat, fainting, looseness of the limbs, difficult respiration, excruciating pain or pain peculiar to the deranged Váyu, secretion of blood or a thin watery secretion like the washings of meat from the injured part, or the organ, with coma or inoperativeness of all the senses. A vein* (Shirá) any way severed or injured is attended with a copious flow (hæmorrhage) of deep red blood, resembling the hue of the cochineal insect, from the ulcer ; and the deranged local Váyu readily exhibits all its essential characteristics, and ushers in diseases which have been enumerated under that head in the chapter on the description of blood.)

Similarly, an injured ligament gives rise to a crookedness or bending of, as well as to a gone feeling in the

* Other than the one situated in any of the abovesaid vital parts of the body.

injured limb or organ, attended with pain and loss of function, and the incidental ulcer takes a long time to heal.

An abnormal increase in the local swelling, together with an excruciating pain, loss of strength, breaking pain in the joints, and in-operativeness of the affected part, mark the wounding of a flexible or immovable joint. Similarly, in the case where a bone is hurt or injured in the course of a surgical operation, the patient is tormented with indescribable pain, day and night, and finds no comfort in any position whatsoever. Pain and swelling specifically mark the affected locality, and thirst and inertness of the limbs add to the list of his sufferings.

A case of any injured **Sirá-Marma** (vital venal or arterial combination or plexus exhibits the same symptoms which characterise the hurting of a single vein, as previously described. Loss of actual perception (anæsthesia), and a yellowish colour of the skin mark the case where the injury is confined to the vital principle of the flesh.

A patient, who is discreet, and is not in a special hurry to end his earthly sojourn, would do well to shun the presence of a bungling, unskilful surgeon, who can not even keep himself unhurt in the course of a surgical operation.

The evils, which attend the oblique insertion of a surgical instrument, have been described before ; and accordingly care should be taken not to leave any room for the occurence of those evils in connection with a surgical operation.

The patient, who may mistrust his own parents, sons and relations, should repose an implicit faith in his own physician, and put his own life into his hands without the least apprehension of danger ; hence a physician should protect his patient as his own begotten child. A surgical case may yield to a single incision, or may require two, three, four or more than that number to effect a cure. By doing good to humanity with his professional skill, a physician achieves glory, and acquires the plaudits of the good and the wise in this life, and shall live in Paradise in the next.

Thus ends the twenty-fifth Chapter of the Sutrasthánam in the Sushruta Samhitá which treats of the eight forms of Surgical operations.

CHAPTER XXVI.

Now we shall discourse on the Chapter which treats of the exploration of splinters lost or deep-seated in the organism **(Pranashta-Shalya-Vijnániyá-madhyáyam).**

Definition :—The term **Shalyam** is derived from the root "Shala" or Shvala" (to go swiftly) joined to the Unádi affix "Yat." Shalyas may be divided into two kinds according as they are extrinsic (**Ágantuka**) or idiopathic (**Shárira**) in their origin.

A Shalyam usually serves to act as an impeding or obstructing agent to the entire organism, and, hence, the science which deals with its nature and characteristics is called the Shalya-Shástram (Surgery). An idiopathic (**Sharira**) Shalyam may be either a hair, nail, embolised blood (Dhátus)*, etc., excrements (Mala), or deranged humours of the body (Dosha), while an extrinsic Shalyam should be regarded as one which afflicts the body and is originated from a source other than any of the preceding ones, including particles of iron and bone, stems of grass, scrapings of bamboo, and bits of horns, etc. But an **Ágantuka** (extrinsic) Shalyam specifically denotes an article of iron, inasmuch as it

* Embolism and Thrombosis have been included within Shalyam by the Ayurvedic Pathologists.

pre-eminently serves the purpose of killing and is the most irresistible of all metals. Since any amount of sharpness can be imparted to the point of an article made of iron and since it can be easily discharged from a distance, iron is the metal exclusively chosen in the construction of darts or arrows.

Classification of Shafts :—Arrows (Shara) may be divided into two classes according as they are feathered or unfeathered ; and their barbs are usually constructed in the shape of trees, leaves, flowers, or fruits, or are made to resemble the mouths of birds and wild and ferocious animals.

Flights of arrows :—The flights or directions of an arrow (Shalyam) may be divided into five different kinds, such as the upward, the downward, the backward (coming from the back), the oblique and the straight. Either through its diminished momentum, or through any external resistance, an arrow may drop down and penetrate into the skin, arteries, or any internal channel of the body, or into any bone or its cavity, causing a wound or an ulcer (Vrana) at the spot of its penetration.

Symptoms :—Now hear me describe the symptoms which are exhibited in connection with an arrow-wound (Shalya*-Vrana). These symptoms may be

* An arrow or an iron barb, from "Shala" to kill.

grouped under two sub-heads, such as the specific and the general. The general characteristics are as follows :—The ulcer, which is marked by pain and swelling and presents a raised or bloated aspect like a water bubble, assumes a dark brown hue and appears soft to the touch. The seat of the ulcer is seen to be studded over with pustular eruptions and a constant bleeding sets in from its inside. The specific symptoms, which mark a Shalyam lodged in the skin, are the hardness and extended character of the local swelling and the darkness (discolouring) of its skin.

In a case where the arrow Shalyam) is lodged in the flesh, the swelling increases in size and the incidental ulcer refuses to be healed and cannot bear the least pressure. Suppuration sets in and the ulcer is characterised by a sort of sucking pain.*

All the preceding symptoms, with the exception of swelling and sucking pain (thirst according to others), manifest themselves in a case where the arrow (Shalyam) has penetrated into a muscle. Similarly, the distension, aching and swelling of a vein mark a case of an arrow-lodged vein. An upheaval and swelling of its fibres together with intense pain characterise a case where the shaft (Shalyam) has lodged in a ligament. The internal passages or channels (Srota) of

* According to certain authorities the patient is tormented with a sort of unquenchable thirst.

the body are choked up and become inoperative, when the shaft is lodged in any one of them. A flow of red and frothy blood with a gurgling sound, accompanied by thirst, nausea, and aching of the limbs, sets in when the arrow is lodged in an artery (Dhamani). Similarly, pain and swelling of diverse kinds mark a case where the shaft is embedded in a bone. The appearance of goose flesh on the skin, a stuffed sensation inside the cavity of the affected bone, and a violent piercing bone-ache, mark a case where the shaft has found a lodgment inside the cavity of a bone. A pierced joint exhibits the same symptoms as described in connection with an arrow-lodged bone, with the exception that the patient is incapable of flexing and expanding the affected joint. In a case where the shaft (Shalyam) has lodged in the abdomen (Koshtha), the bowels become constipated; the abdomen becomes distended with a rumbling in the intestines and the suppression of flatus and urine; and ingested food matter, as well as urine and feces are found to ooze out of the fissure or mouth of the ulcer. Symptoms, similar to those above described, manifest themselves when the arrow is lodged in any of the vital parts (Marmas) of the body. The preceding symptoms are but faintly exhibited in a case of superficial penetration.

An ulcer incidental to the penetration of an arrow

(Shalyam), along the direction of the local hair, in* the throat, in any internal channel of the body, or in a vein, the skin, or a muscle, or into a cavity of the bone, and not in any way affected by the action of the deranged bodily humours, may speedily and spontaneously heal ; but it may break open and become painful afresh if the bodily humours become deranged and aggravated by a blow or physical exercise.

Localisation :—The exact position of a shaft (Shalyam) embedded in the skin should be ascertained by applying a plaster composed of clay, Másha-pulse, Yava, Godhuma and cow-dung over the injured limb or part. The part (limb) should be duly lubricated with oil, and diaphorised (by fomenting or applying heat to its surface) before the plaster is applied. The shaft (Shalyam) should be considered as lodged in that part which would be marked by pain, redness, or swelling (Samrambha) after such application. As an alternative, the affected part should be plastered with clarified butter, common clay and sandal paste. The embedded shaft (Shalyam) is then exactly located at the spot where, owing to the heat of the affected part, the clarified butter, or earth, or sandal paste would be found to have melted, or dried up.

Similarly, the mode of localising a shaft (Shalyam),

* So as not to obstruct the coursing of the blood or serum in the locality.

embedded in the flesh is as follows :—First, the patient should be duly lubricated and diaphorised with medicinal agents suited to the requirements of his case. Then, the part or the limb having been thus reduced with depletive measures, the shaft would be found to have been dislodged from its seat and to be moving about (within the deeper tissues of the affected part), giving rise to pain, redness and swelling. In such a case the exact location of the shaft should be fixed at the spot where the pain and swelling, etc. would occur. The same measures should be adopted in the case of a shaft (Shalyam) which lies embedded in the cavity of the abdomen (Kostha), or in a bone, or joint, or muscle

In the case of a Shalyam lodged in a vein, in an artery, in any external channel (Srota) of the body, or in a ligament, the patient should be made to ride in a carriage with a broken or lopped off wheel and dragged up and down in it on an undulating road The pain and swelling, etc. incidental to the jolting, would occur at that part of his body, where the shaft (Shalyam) is embedded.

In the case of a shaft Shalyam) lodged in a bone, the affected bone should be lubricated and diaphorised with oil and heat respectively, after which it should be firmly pressed and bound up. The seat of the pain or swelling, caused by such a procedure, would mark the exact locality of the embedded Shalyam.

Similarly, in the case of a shaft (Shalyam) lodged in a joint, the same lubricating, diaphorising, compressing, and expanding measures should be adopted, and the painful swelling caused thereby would indicate its exact locality. No definite method can be laid down as regards ascertaining the exact location of a Shalyam lodged in any of the vital parts of the body (Marma), inasmuch as they are co-existing with (the eight different locations of ulcers, such as, the skin, the flesh, the bone, etc.)*

General rule :—A painful swelling, occurring at any part of the body and incidental to such physical or natural endeavours of the patient, as riding on an elephant or on horse-back, climbing a steep hill, bending of a bow, gymnastic exercises, running, wrestling, walking, leaping, swimming, high-jumping, yawning, coughing, singing, expectorating, eructating, laughing, practising of Pránáyáma (regulating the breath preliminary to the practice of Yoga), or an emission of semen, urine or flatus, or defecation, would clearly indicate the exact location of the embedded shaft (Shalyam).

Authoritative Verses on the Subject :—The part of the body, which is marked by pain and swelling, or which seems heavy and is marked

* Accordingly measures enjoined to be adopted in connection with a shaft (Shalyam) lodged in any one of them should be applied *mutatis mutandis* to cases in which these **Marmas** would be found to be similarly affected.

by complete anæsthesia, or the part which the patient repeatedly handles, or constantly presses with his own hand, or which exudes any sort of secretion, and is marked by a sort of excruciating pain, or which he involuntarily withdraws from, or constantly guards against (an imaginary painful contact), should be regarded as clearly indicative of the exact location of the embedded Shalyam.

A physician, having tested with a probe the cavity of the incidental ulcer or the interior of the affected locality, and found it to be characterised by little pain and absence of any aching discomfort or unfavourable symptoms and swelling, after a course of proper treatment, and after having been satisfied as to its healthy look and the softness of its margin, and after having ascertained that any remnant of the embedded arrow can not be perceived with the end of the director by moving it to and fro, should pronounce it free from any embedded foreign matter (Shalyam), which would be further confirmed by the full flexion and expansion of the affected limb or organ.

A particle of soft bone, horn or iron, in anywise lodged in the body, assumes an arched shape ; whereas bits of wood, grass-stems, or chips of bamboo-bark, under the same circumstances, putrify the blood and the local flesh, if not speedily extracted from their seats of lodgment. Bits of gold, silver, copper, brass, zinc, or

lead, anyhow inserted into a human organism, are soon melted by the heat of the Pittam and are assimilated and transformed into the fundamental principles of the body. Metals or substances of kindred softness, and which are naturally cold, are melted and become amalgamated, under such circumstances, with the elements of the organism. A hair, or a particle of hard bone, wood, stone, bamboo scraping, or clay, which remains lodged in the body as a Shalyam, does not melt, nor undergo any change or deterioration.

The physician, who is fully conversant with the five different courses or flights of an arrow (Shalyam), whether feathered or unfeathered, and has minutely observed and studied the symptoms due to its lodgment in any of the eight different seats of ulcers (Vrana) in the human organism (such as, the skin, etc.), is alone worthy of attending on kings and nobles.

Thus ends the twenty-sixth Chapter of the Sutrasthánam in the Sushruta Samhitá which treats of exploration of splinters.

CHAPTER XXVII.

Now we shall discourse on the Chapter which deals with the modes of extracting splinters **(Shalyapaniya-madhyayam).**

There are two kinds of **Shalyas.** A Shalya is either loose or firmly fixed to its seat within the body. We shall presently speak of the fifteen different modes of extracting a loose Shalyam, which are as follows, viz.: Extraction by natural expulsive functions of the body (Svabhába), by suppuration or putrefication (Páchanam), by excising (Bhedanam), by bursting (Dáranam), by pressing (Pidanam), by rubbing (Pramárjanam), by blowing with the mouth of medicinal powders into the affected part (Nirdhmápanam), by the administration of emetics (Vamanam), by an exhibition of purgatives (Virechanam) by washing (Prakshálanam), by friction with the fingers (Pratimarsha), by straining as at the time of defecation (Praváhanam), by sucking (Áchushanam), by applying a magnet (Ayaskánta) and by exhilarating (Harsham).

An embedded foreign matter is usually expelled from the eyes, etc, by inducing lachrymation, sneezing, eructation, coughing, micturition, defæcation, and the emission of flatus.

A Shalyam, or any other foreign matter which has

penetrated into the deeper tissues of flesh, should be extracted by setting up suppuration in the affected locality. The putrid flesh would loosen the fixture of the Shalyam, the weight of the secreted pus and blood causing it to drop down.

The seat or the locality of a fixed Shalyam should be opened by an incision in the event of its not being ejected even after the establishment of the local suppuration. If the Shalyam fails to come out even after the incision, the affected part should be pressed with the fingers, or medicines, endued with the virtue of exerting pressure, should be applied over its surface. A particle of any fine matter, accidentally dropped into the eye, should be removed with sprays of cold water, or by blowing into it with the mouth, or by rubbing it with hair or the fingers.

A residue of digested food or mucous, a remnant of any food matter (Áhárashesha) misdirected into the nostrils, or any small splinter loosely pricking thereto (Anu-shalyam), should be expelled by breathing hard, or by coughing upward through the nostrils (Utkásha), or by blowing through the nose. A morsel of food, acting as an obstructing Shalyam in the cavity of the stomach (Ámáshaya), should be ejected by rubbing (Pratimarsha) the fingers against the lining of the throat, or against the region of the epiglottis, while such a morsel brought down into the intestines,

should be evacuated by administering purgatives (Virechanam).

The pus or any other morbid matter found within the cavity of an ulcer should be removed by washing it, while incarcerated flatus, or obstructed scybala or retained urine, or obstructed fœtus, should be borne down and expelled by means of straining.

Any deranged Váyu or watery secretion incarcerated in any part of the body, as well as poisoned blood or vitiated breast-milk, should be sucked off with the mouth, or with a horn.

A loose, unbarbed arrow, lodged in a wound with a broad mouth and lying in an **Anuloma** direction, should be withdrawn by applying a magnet to its end. A shaft of grief, driven into the heart by any of the multifarious emotional causes, should be removed by exhilaration and merry-making.

A shaft (Shalyam), whether large or small, may be withdrawn from its place in either of the two ways known as the **Anuloma** and **Pratiloma**. The **Anuloma** consists in withdrawing a Shalyam through a way other than that of its penetration, while the contrary is called the **Pratiloma**.

A Shalyam lodged in a place lying close to the spot of its penetration (Arvácheenam) should be extracted through the way by which it has entered

(Pratiloma). On the other hand, a shaft or Shalyam, piercing deep into any pa'rt of the body, but not coming out by the other side (Parácheenam), should be drawn out through a way other than that of its penetration (Anuloma).

A shaft, piercing deep into any part of the body so as to reach the other side of the wounded limb or part, (but not cutting out clean through it owing to the diminution of its original momentum), and remaining protruded in the heaved up flesh, should be extracted through a channel other than that by which it has originally penetrated (Anuloma), and by stirring or striking it with the hand or a hammer. The heaved up flesh should be opened with an incision, when found possible of being so opened, and the embedded Shalyam should be drawn out by stirring or striking it with the hand as laid down before.

A Shalyam, lodged in any soft part of the abdomen, chest, arm-pits, inguinal regions or ribs, should not be cut open or struck with hammer, but should be tried to be removed with the hands through the way of its penetration (Pratiloma), in failure whereof the Shalyam should be extracted with surgical appliances (Shastra) or any other surgical instruments (Yantras).

Authoritative Verse on the Subject :—A patient, fainting away (during the course of such a surgical operation), should be enlivened by

dashing cold water over his face. He should be solaced with many a hopeful and cheering word, and a nourishing diet such as, milk, etc. should be given him, and his vital parts should be protected.

Then having extracted the Shalyam, the incidental wound or ulcer, the blood having been wiped of, should be fomented with heat or by applying warm clarified butter to its surface in the event of it being found fit to be so treated *i.e.*, devoid of pain and unattended with further bleeding). Cauterisation should be resorted to where the condition of the wound would indicate such a measure. After that, the wound should be plastered (Pradeha) with honey and clarified butter, and bandaged with a piece of clean linen ; and directions as to the diet and nursing of the patient should be given (as previously laid down).

A Shalyam, lodged in a vein or a ligament (Snáyu), should be extracted with the help of a probe. The shaft (Shalyam), lodged in the body and lying buried under the incidental swelling, should be extracted by firmly tying blades of Kusha grass around its body. A shaft (Shalyam), lodged in a spot situated anywhere close to the heart, should be withdrawn by the way by which it has entered ; and the patient should be enlivened with sprays of cold water, etc. during the operation.

A Shalyam, lodged in any other part of the body and that is difficult to extract, and that produces pain and local inflammation, should be removed by cutting the part open. In the case of a shaft (Shalyam) which has pierced into the cavity of a bone, the surgeon should firmly press the affected bone with his legs, and pull out the embedded shaft with all his might by gripping it with a surgical instrument, in failure whereof a strong man should be asked to firmly catch hold of the patient, and the Shalyam should be pulled out with the help of a gripping surgical instrument as before.

As an alternative, the bottom of the shaft should be tied to the string of a bow, strung and fully bent down ; and the Shalyam should be ejected with the means of a full twang. As an alternative, a horse should be harnessed in the fashion known as the Panchángi-vandhanam (lit. bound in the five parts of the body), and the end of the Shalyam should be bent down and tied to the bridle. Then the horse should be so whipped as to raise its head first, thus pulling out the embedded shaft (Shalyam) from its seat of lodgment by the jerk of its head. As an alternative, a high and tough bough of a tree should be lowered down and tied to the bent end of the shaft as in the preceding case. The bough should be then let loose, thus pulling out the shaft (Shalyam) with its rebounding force.

A shaft (Shalyam), lodged in a bone and lying protruded in the heaved up local flesh (situated in a place other than the inguinal regions, abdomen, or arm-pits, etc.), should be stirred by striking it on the head with an Asthilá a round stone,—a short hammer according to certain authorities), or with a stone or hammer, and should be taken out by the way of its penetration.

The feather of a barbed shaft, lying embedded in a bone situated at a part of the organism where the existence of such a foreign matter is calculated not to create any special discomfort, should be first crushed by putting pressure on the heaved up or protruded flesh, and the shaft then should be gently pulled out of its seat of lodgment.

In the case of a bit of shellac being accidentally pricked into the pharynx, a metal tube should be first inserted into the passage, and then a heated metallic rod should be reached down to the obstructing shellac through its inside. The shellac, thus melted by the heat of the inserted rod, would naturally stick fast to it, which should be then condensed by an injection of cold water poured down through the aforesaid tube; after that the rod should be withdrawn thus carrying away the melted shellac at its end.

According to certain authorities, any other obstructing foreign matter accidentally introduced into the pharynx should be withdrawn with the help of a rod,

soaked in melted wax or shellac, and then inserted into that passage, all other procedure being the same as in the preceding instance.

In the case of a bone Shalyam (such as the bone of fish etc.) having accidentally stuck fast in the throat, a bundle of hair, tied to a string of thread, should be inserted into the gullet of the patient, the physician holding the other end of the string in his hand. Then a copicus quantity of water, or of any other liquid substance, should be poured down into his throat, so as to entirely fill his stomach. After that some kind of emetic should be given to the patient, and the string should be pulled out as soon as the bundle of hair would be felt to have struck below the obstructing bone or Shalyam, which would naturally come out with the pull. As an alternative, the top end of a soft twig, as is generally used in cleansing the teeth, should be bruised into the shape of a brush, and the thorn or the Shalyam should be removed with its help. The incidental wound should be treated by making the patient lick a compound of clarified butter and honey, or of the powders of the Triphalá, saturated with honey and sugar.

The body of the patient should be pressed or rubbed, or he should be whirled round by the ankles, or generally measures, calculated to induce vomiting, should be adopted in a case where he would be found to have

swallowed a stomachful of water (as in a case of drowning). As an alternative, he should be buried under the ashes up to his chin.

Strong wine should be given to the patient, or he should be slapped on the shoulders, so as to cause him to suddenly start in a case where a morsel of food would be found to have obstructed and stuck fast in his gullet. A tight gripe about the throat of a person with a creeper, rope or the arm of an antagonist, tends to enrage the local (Kapham), which obstructs the cavity of the passage (Srota) producing salivation, foaming at the mouth and loss of consciousness. The remedy in such cases consists in lubricating and diaphorising the body of the patient with oil and heat, and in administering strong errhines (Shiro-Virechanam), and the juice or extract of meat which is possessed of the virtue of subduing the deranged Váyu.

Authoritative Verses on the Subject:—An intelligent physician should remove a Shalyam with due regard to its shape, location and the adaptability of the different types of surgical instruments to the case under treatment. A physician should exercise his own discretion in extracting feathered shafts (Shalyas) from their seats of lodgment, as well as those that are difficult of extraction.

A physician is at liberty to exercise his own skill and wisdom, and to devise his own original means for

the extraction of a Shalyam with the help of any surgical instruments when the abovesaid measures would prove abortive. A Shalyam, not removed from the body and left in its place of lodgment, brings on swelling, suppuration, mortification of the affected part, and a sort of excruciating pain, and may ultimately lead to death. Hence a physician should spare no pain to extract a Shalyam from its seat of lodgment.

Thus ends the twenty-seventh Chapter of the Sutrasthánam in the Sushruta Samhitá, which treats of extraction of Shalyam.

CHAPTER XXVIII.

Now we shall discourse on the Chapter, which deals with the favourable or unfavourable prognosis of an ulcer. **(Viparitaviparita - Vrana - Vijnaniya - madhyayam).**

Metrical Text :—Certain fatal or unfavourable symptoms **(Arishtas)*** unmistakably presage the death of an ulcer-patient, as a flower, smoke and cloud respectively herald a fruit, fire and rain. In most cases, the ignorant cannot interpret aright these fatal symptoms owing to their extremely subtile nature, or out of ignorance or stupidity, or because such symptoms are very closely followed by the death of the patient.

These fatal indications serve as sure precursors of death in a patient, unless warded off by the blessings of holy Bráhmanas, who are free from low desires or animal propensities, and are also accustomed to practise the **Yoga** and other religious penances ; or death may be averted with the help of men who are initiated into the mystery of concocting life-giving elixirs (Rasáyanam).

* The symptoms which are developed by the deranged bodily humours in the organism of a man at a time when they have passed beyond all medical cure, and when the body serves as a mere passive back-ground for those phenomena, awaiting its impending dissolution, are called **Arishtas.**

Many such indications do not prove instantly fatal but bring on death in course of time, just as diseases, supposed by some to be due to the influence of malignant planets, take time before they become patent out of their incubative stages. An attempt to cure a doomed patient is only repaid by failure and the ridicule of the world, and hence an intelligent physician should make it worth his while to carefully observe and study these fatal indications. A contrariety of the natural smell, colour, taste, (sensation, sound, touch, etc.) of an ulcer indicates a near and fatal termination of the disease.

An ulcer emits a pungent, sharp, or fishy smell under the respective influences of the deranged Váyu, Pittam and Kapham. An ulcer, deranged by the action of the vitiated blood, emits a smell like that of iron (Loha-gandhi), while one, originated through the concerted action of the deranged humours, emits a smell characterised by the distinctive features of each of them. On the other hand, an ulcer, due to the joint action (of the deranged Váyu and Pittam), emits a smell like that of fried paddy; one, due to the action of the deranged Váyu and Kapham, emits a smell like that of linseed oil; whereas one, brought about by the action of the deranged Pittam and Kapham, smells like sesamum oil. All those odours, marked by a somewhat fishy character, should be deemed the natural odours of ulcers, and any other smell should be held as a contrary or unnatural one.

An ulcer emitting a sweet smell like that of wine, or fragrant aloe wood (A'guru), clarified-butter, Játi flower, Champaka, sandal, lotus or any celestial flower (Divyagandha), should be regarded as the precursor of death. Similarly, a smell like the one which characterises a dog, horse, mole, crow or a bug, or like the one emitted by dry, putrid meat, or resembling the smell of earth or slime, should be likewise deemed unfavourable or fatal in an ulcer.

A physician should give up a case where an ulcer, though it has assumed a blackish, saffron or Kankustha colour (a sort of mountain earth) through the action of the aggravated Pittam, is divested of the burning, sucking and drawing pain, which is peculiar to that morbiferous diathesis. Similarly, an ulcer, which, though brought about through the action of the deranged Kapham, has become cold, hard and whitish as natural in one of the Kaphaja type, should be given up as soon as it is marked by a burning pain. Likewise an ulcer, due to the action of the deranged Váyu, and characterised by a blackish hue and a thin secretion, and which is found to invade the vital principles of the body, should be abandoned by a physician, whenever found to be entirely devoid of pain.

An ulcer, which makes a gurgling or groaning sound, or one which is characterised by an extreme burning sensation, or is confined to the skin and the flesh,

and is marked by the emission of wind with a loud report, is sure to have a fatal termination. Likewise, one, which is characterised by extreme pain, though not otherwise seated about any of the vital parts of the body, or which is cold on the surface, though attended with an extremely burning sensation in its inside and vice versa, should be deemed the precursor of death. Similarly, an ulcer should be regarded as fatal, that is shaped like the barb of a spear, or a Kunta (a kind of barbed dart or spear), or like a banner, chariot, horse, or an elephant, or like a cow, an ox, a temple, or a palace.

A wise physician, with any regard to his own reputation, should abandon a patient laid up with an ulcer which appears to have been dusted over with a sort of pulverised crust, or who has been suffering from one accompanied by loss of flesh and strength, cough, difficult respiration and aversion to food. An ulcer, which occurring at any of the vital parts of the body secretes a copious quantity of pus and blood, and refuses to be healed even after a course of proper and persistent medical treatment, is sure to have a fatal termination.

Thus ends the twenty-eighth Chapter of the Sutrasthánam in the Sushruta Samhitá, which deals with the favourable and unfavourable prognosis of ulcers.

CHAPTER XXIX.

Now we shall discourse on the Chapter, which treats of favourable or unfavourable prognosis in diseases, as known from messengers, omens and dreams etc. **(Viparitávviparita-Duta-Shakuna-Svapna- Nidarshaniya-madhyáyam).**

Metrical Texts :—The favourable or unfavourable termination of a disease may be predicted from the appearance, speech, dress and demeanour of the messenger sent to call in a physician, or from the nature of the asterism and the lunar phase marking the time of his arrival, or from the direction of the wind (Anila) blowing at the time, or from the nature of omens (Shakuna) seen by him on the road, or from the posture, temperament or speech of the physician himself.

A messenger belonging to the same caste as the patient* should be regarded as an auspicious omen, whereas one from a different caste would indicate a fatal or an unfavourable termination of the disease.

A eunuch, a husband of many wives, a messenger

* A Páshanda messenger should be despatched to call in a physician where a member of the same community would fall ill ; a householder, in the case of a patient of the same social order ; a Bráhmana, in the case of a Bráhmana patient, and so on ; while an infringement of the rule would be looked upon as an evil omen.

sent on a different errand and incidentally calling at a physician's house, or one who has quarrelled on the road, or messengers who come riding on camels, donkeys or in carts, or on foot in one unbroken line, should be looked upon as inauspicious messengers.

Similarly, messengers, who call at the house of a physician, holding in their hands a rope, club, or any other weapon, or who come dressed in black, red, yellow, wet, dirty or torn garments, or with the upper sheets placed or arranged on their right shoulders (Apasavya), or clad in single cloths without such upper sheets on, as well as those, who are possessed of additional or smaller number of limbs, or look disturbed and agitated, or whose bodies are in any way mutilated or such, as look fierce and haughty, or speak in a rough and harsh tone, or utter any term implying death, should be regarded as augurs of evil.

Likewise, a messenger, tearing off a blade of grass or a chip of wood with his fingers, or handling the tip of his nose or the nipples of his breast, or pulling the ends of his cloth or hair, or the ring-finger of his hand, or brushing his nails and hair, or standing with his fingers in his ears or nostrils, or waiting with his hands placed on his cheeks, chest or head, or about the regions of the arm-pits, as well as one, who has arrived at the house of the physician with bits of human skull or stone, or with ashes, bones,

paddy husks or charcoal in the palms of his hands, or one, who digs into the earth with his toe-nails, or wantonly breaks stones or brickbats, while waiting at the physician's house, should be regarded as a messenger of evil augury.

A messenger, who at the time of visiting a physician for his professional help comes smeared with oil, or with red sandal paste or mud, and carries a red garland or a ripe but sapless fruit, or any other thing of like nature in his hand, or brushes together the nails of his fingers or touches his legs with the hand, or carries a shoe in his hand, or who appears to have been suffering from a foul or loathsome disease, further one, who breathes heavily, or weeps or behaves contrarily, or stands with the palms of his hands united and his face turned towaids the south, or waits on one leg on an uneven ground with the other raised and placed on a higher support, should be looked upon as the precursor of evil.

A messenger, reporting his errand to the physician while he is facing the south, or who is in an unclean state of the body, or engaged in kindling a fire or in killing an animal, or is remaining in a nude state, or is found to be lying on the bare floor of his chamber, or performing an afiection after attending to a call of nature, or anointing himself with oil, or perspiring, or sitting with his hair dishevelled, or in a state of mental

perturbation, is to be looked upon as a messenger fore-boding evil.

A messenger, seeking the interview of a physician while he is engaged in offering oblations to his departed manes, or to the gods, or one who calls on him at noon or at midnight, at morning or at evening, or during the happening of any abnormal physical phenomenon, or at an hour under the influence of any of the following asterisms (lunar mansions), *viz.* the Árdra, the Ashlesá, the Maghá, the Mulá, the two Purvás, and the Bharani, or on the day of the fourth, ninth, or the sixth phase of the moon (whether on the wane or on the increase), as well as on the last days of months and fortnights, should be considered as a messenger of evil augury.

A messenger, hot and perspiring from being seated near a blazing fire, and calling upon a physician in the midday, should be deemed as an inauspicious one in the case of a Pittaja distemper; whereas a messenger of similar description should be looked upon as foreboding the favourable termination of a disease, if due to the action of the deranged Kapham. The favour-able character of a messenger should be likewise deter-mined in diseases originated through the action of the deranged Váyu,* etc.; and an intelligent physician is

* A messenger, visiting a physician in the afternoon or during a heavy rain or storm, or at a time when the vital wind is naturally disturbed and agitated, indicates an unfavourable prognosis.

at liberty to exercise his own discretion in determining the omen. Similarly in a case of hæmoptysis, dysentery or any morbid discharge from the urethra (Prameha), the first interview between a messenger and a physician near a reservoir of water is an omen of happy augury. A learned physician shall thus determine the ominous character of a messenger in connection with other diseases as well.

Messengers of happy augury :—A fair and handsome messenger, who is clad in clean and white garments, and belongs to the same caste or spiritual clan (Svagotra) as the patient himself, forebodes the successful termination of the disease (for which the medical aid is needed). A messenger, calling on a physician either on foot or in a bullock cart, and who is contented, intelligent, capable of acting according to the rules of decorum, time and circumstances, and is independent and original in his thoughts and ideas, and carries ornaments, and other auspicious articles about his person, is alone capable of rendering the best services in connection with the calling in of a physician. A messenger, for the first time, interviewing a physician, when the latter is complacently seated with his face towards the east, and on a clean and even ground, should be regarded as a messenger of happy augury.

Raw meat, a pitcher full of water, an umbrella, a Brámhana, an elephant, a cow, an ox and an article

of a white colour, should be deemed auspicious sights by a physician on his way to the house of a patient. A mother, a cow with her calf, a small pitcher of water, a decorated virgin, fish, unripe fruits, a Svastika (a cross shaped religious insignia), sweetmeat, curd, gold, a vessel full of sun-dried rice, gems, flowers (according to certain commentators a well disposed king), a blazing fire, a horse, a swan, a peacock, a bird of the Chásha species, chantings of Vedic verses, claps of thunder, blowings of conch-shells, notes of lutes, sounds of chariot wheels, roar of lions, lowings of cows and bullocks, neighings of horses, trumpeting of elephants, cacklings of geese, hootings of owls, and the pleasant conversation of persons going to the palace of a king, should be regarded as lucky sights and sounds by a physician on his way (to the house of a patient).

Similarly, harmonious melodies of birds chirping on the boughs of healthy Kshira trees, bent under the weight of fruit, and looking gladsome with their dowry of beautiful blossoms and foliage, or notes of birds perched on the terraces of palace towers or on the tops of banner poles singing melodiously, or birds following the messenger with their songs or singing seated from the auspicious quarters of the heavens, or following him on his left, should be equally regarded as sights and notes of happy foreboding.

A bird, seated on the withered trunk of a blighted

or thunder-blasted tree, or on a thorny knoll covered over with creepers, or on ashes or stones, or amidst ordure or husks of grain, or on dried skeletons, and singing in a harsh voice with its head turned towards the blazing or inauspicious quarter of the sky, should be deemed as portending evil.

Similarly, birds, which are possessed of names of masculine terminations are happy omens if seen on the left by a physician on his way to the house of a patient, while birds, on a similar occasion, whose names have feminine endings, are auspicious if seen by him on the right. A dog or a jackal, seen running from the right to the left, is a happy omen, and so is a mongoose or a Chásha bird if seen on the left. A hare, a serpent, or an owl, seen on either side of the road, is an inauspicious sight. The sight and the sound of a Godhá or a Krikalásha (an animal of of the lizard species) are both inauspicious.

If a man, other than a messenger of inauspicious character but possessed of features alike unfavourable, should happen to cross the way of a physician, just starting on a professional call, he should be regarded as equally indicative of evil. The sight of a vessel full of Kulutha pulse, or of husks of grain, or of stone, ashes, clay or charcoal, or of oil, is inauspicious. Similarly, the sight of a vessel filled with red mustard or with wine other than which is clear and mild

(Prasanna) should be deemed an omen of evil augury.

Similarly, the sight of a parched corpse, or of a withered tree or Palásha branch, is equally inauspicious. A physician, meeting a member of any of the vile or degraded castes or a blind or indigent person, or a man inimically disposed towards him, should consider the character of the disease to be unfavourable.

A gentle, cool and fragrant breeze, blowing from the direction of his destination, should be regarded as an auspicious omen by a physician. A wind, which is hot, dry, and is charged with the fetid exalations of putrid matter, and which blows from the direction of his starting point, should be regarded as an evil omen.

The word "cut," used by another and accidentally heard by a physician (on his way) to the bed-side of a patient laid up with Granthi (aneurism) or Arvuda (tumour), should be regarded as a good omen ; while the term "open", heard under similar circumstances and in connection with a case of Vidradhi (abscess), or Gulma (abdominal gland), or Udara (ascites), should be regarded as an equally auspicious portent. Similarly, the term "stopped" is commended in a case of dysentery or hæmoptysis. Thus the physician should interpret the auguries according to the nature of each individual case.

A curse, imprecation, or wailing like "woe to me", as well as sobs, groans, reports of defecation or vomiting, the brayings of an ass, the frightened sound of a camel, an obstacle or impediment in the path of a physician, or a sudden breakage, collapse, or the falling of any article from a cupboard, and a sad or dejected spirit of the physician without any assignable cause, should be regarded as evil omens at the time of his starting.

These omens should be observed or attended to at the time of first entering the house of a patient, or at the threshold or within its walls, but not after the physician has once commenced the medical treatment. The sight of a knot of torn hairs, ashes, bones, wood, stone, husks of grain, cotton, thorns, a bedstead with its legs upturned, wine, water, fat, oil, sesamum, dried grass, straw, a eunuch, a deformed person or one with a broken limb, a nude man, or one with a clean shaved head, or clad in a black garment, should be regarded as evil omens by a physician, whether noticed by him at the time of starting or after getting into a sick room. Pots or utensils placed in pendent brackets, and found to be spontaneously moving about without any definite cause, as well as any other fallen articles digged in, smashed in or thrown out of the sick-room ; a physician sitting dejected and gathered up in his seat, and the patient sitting with a downcast face, or pricking his body or at the bed clothes

while talking with the physician, or shaking his hands, back or head, or taking hold of or placing the hands of the physician in his own, or on his breast, or interrogating the physician with an up-turned face, or pressing his own limbs, when he is interrogated by the physician in return, should be considered as unfavourable signs.

The patient, in whose house a physician is not duly honoured, can never rally. The due honouring of a physician leads to a speedy recovery. A messenger of good omen forebodes the favourable termination of a disease, while the contrary is indicated by a messenger of the opposite type. Hence a physician shall carefully observe the ominous character of a messenger (despatched to seek his aid).

Dreams :—Now I shall describe the **dreams**, which either being dreamt by the patient, or by his relations, portend fatal or a successful close of the malady. The patient, who dreams of going towards the south on the back of an elephant, or on that of any carnivorous animal, or of riding on a boar or on a buffalo, or sees himself carried towards the quarter by a dark woman with dishevelled hair and clad in a blood-red garment—laughing and dancing, soon meets his doom. A dream by a patient that members of vile castes have been drawing him southward, or that ghosts or anchorites have been embracing him, or that

savage beasts with diabolical faces have been smelling his head, predicts that his earthly days are numbered, while such dreams occurring in a healthy subject indicate an impending disease.

Similarly, the patient, who dreams of drinking oil or honey, or of diving into a bed of dank or oozy slime, or of laughing and dancing mud-besplattered, is at the threshold of death. A dream of having entwined a wreath of red flowers round one's head, though otherwise nude or stripped of clothes, or of seeing reeds, bamboos, or palm trees growing on his chest, portends the impending death of a patient. On the other hand, such dreams, occurring in a healthy subject, forebode the advent of disease. Likewise, the patient, who dreams of being eaten up by fish, or who fancies himself again entering into the womb of his mother, or thinks he is falling from the summit of a mountain or into a dark and dismal cave, or as being carried away by the current of a river, or assailed and overwhelmed by a pack of crows, is already a doomed being. The dream of a clean shaved head, or of falling stars, or of dying lamp light, or of the extraction of one's own eyes, or of shaking divine images, or of earthquakes, purgings, vomitings or falling out of one's own teeth, is always fatal. The patient, who dreams of climbing a Shálmali, Kinsuka, or Pári-bhadra tree, or of ascending an ant-hill or a funeral pyre, or of witnessing himself bound to a sacri-

ficical stake, or of receiving or eating, cotton, levigated sesamum paste, . iron, salt, sesamum, boiled rice, or drinking oil or wine (Surá), as the case may be, should consider himself as a doomed being, while such dreams in a healthy subject indicate the impending attack of a disease.

A dream should be regarded as ineffectual which is quite in conformity with the physical temperament of the dreamer (such as, one of scaling the heavens by a person of Vátaja temperament ; one of seeing a blazing fire, a flash of lightning, or a meteor-fall by a man of Pittaja temperament ; and one of witnessing reservoirs of water, etc. by a man of Kaphaja temperament) as well as one which has been forgotten or followed by another of an auspicious type or is the outcome of premeditated thought like one dreamt in the day time.

A fever patient dreaming of friendship with a dog, a consumptive one dreaming of making friends with a monkey or a monster ; a hysteric patient who dreams of making friendship with a ghost ; a Prameha or dysentery patient dreaming of drinking water ; a leper dreaming of drinking oil, or a Gulma patient dreaming of a tree grow-on his belly, should count his days as numbered. A person afflicted with any disease of the head, and dreaming of a tree growing on his head, or one suffering from vomiting and dreaming of eating sesamum cakes ; or

an asthma patient, or a person, afflicted with thirst, dreaming of making a journey on foot ; or a jaundice patient dreaming of eating a food prepared with turmeric ; or a person suffering from hæmoptysis and dreaming of drinking blood, should be considered as about to depart this life. A patient having had any of the aforesaid dreams, under the circumstances, should get up in the morning and make a gift of Másha-pulse, sesamum, iron and gold to the Bráhmanas, and repeat the blessed Tripáda Gáyatri (Mantras.)

Having dreamt a bad dream in the first watch of the night, a person should meditate upon a holy or auspicious subject, and then lie down again with all his senses fully controlled, and repeat the Mantras sacred to any of the gods. An evil dream should not be related to another. The dreamer of the dream should reside in a holy temple for three consecutive nights, and worship the deity with the most fervent devotion, whereby its evil effects would become nullified.

Now we shall describe the dreams, which are of auspicious nature. Members of the twice born castes, gods, cows, bullocks, kings, one's own living friends and relations, a blazing fire, a Bráhmana, or a sheet of clear water seen in a dream by a healthy person predict or predicts to him a pecuniary gain in the near future, while such dreams occurring in a diseased person indicate a speedy recovery of the disease he has been

suffering from. Similarly, dreams of meat, fish, garlands of white flowers, cloths and fruit predict a gain or a speedy cure, as the case may be.

Dreams of ascending the terrace of a royal palace, of climbing a tree or a hill, or of riding an elephant predict similar results as above. A dream of one's sailing over a river, pool or sea of turbid water predicts a money gain or cure, according as one is healthy or diseased. A dream of having been bit or stung by a serpent, by leeches, or by a bee, indicates bliss or cure, according to one's good or bad health at the time. The man, who usually gets such auspicious dreams, should be looked upon as a long-lived man, and may be unhesitatingly taken under medical treatment by a physician.

Thus ends the twenty-ninth Chapter of the Sutrasthánam in the Sushruta Samhitá, which deals with favourable or unfavourable prognosis from messengers, birds, omens etc.

CHAPTER XXX.

Now we shall discourse on the Chapter which treats of the prognosis that can be obtained from the perverted functions of the five sense organs **(Panchendriyartha-Vipratipatti-madhyayam).**

Metrical texts :—A perversion or contrariety of the functions of the mind or brain (Shilam), and of the organs of sense-perception, is called **Arishtam** (an unfavourable symptom foreboding death). Now hear me describe, in brief detail, the symptoms which are called **Arishta** (fatal indications).

The man, who hears a variety of divine sounds even in the absence of any of the celestial beings, (such as, the Siddhas, the Gandharvas etc.), or thinks that he is hearing the uproar of a city, or the moanings of the sea, or the rumbling of a rain cloud, without their actual presence or proximity, or who is incapable of catching their sounds even when they are actually present and sounding, or assigns to them causes other than the actual ones, should be regarded as a doomed being. The person, who interprets the uproar of a city or the rustling forest as sounds emanating from other sources, or rejoices at the voice of his enemies, and is annoyed at that of his own devoted friends, or who suddenly loses the faculty

of hearing without any manifest or tangible reason, should be deemed as already on the threshold of death.

The man, who feels cold when touching a hot or warm substance, and, *vice versa*, complains of a burning sensation even when suffering from a boil, or a postule of the Kaphaja type (characterised by numbness, shivering, etc.), or shivers when the temperature of his body is felt to be considerably high, should be looked upon as already on the point of death. The person, who has lost the faculty of touch, and does not feel any pain in any part of the body when it is struck or amputated, or feels as if his body had been strewn over with particles of dust, or suffers from discoloration of the skin which becomes marked with blue or red stripes, and who is harassed by hosts of blue flies after a bath or an anointment, should be regarded as one who has already passed the confines of life.

Similarly, the man whose body emits a fragrant smell without having been rubbed with any kind of perfume, or to whom a sweet thing tastes acid, and an acid tastes sweet, or who exhibits symptoms of a general perversion of the faculty of taste, or in whom (articles of) different tastes (administered in their officinal order of enumeration) tend to aggravate the deranged bodily humours, or bring about their pacification and a dulness of appetite if partaken of in the inverted

order, should be regarded as a departed soul, like the one who has lost the faculty of taste.

The man, who deems a fetid odour to be a fragrant perfume, or one fragrant to be fetid, or one who does not feel any discomfort even at the smell of a burning lamp wick that has just been extinguished, or who has entirely lost the faculty of smell, should be looked upon as a dead man.

The man, to whom the twin attributes of heat and cold, pleasure and pain, as well as the peculiarities of weather (as storm, drought, snowfall, etc.), and the different quarters of the sky appear to be reversed or inverted; one who has lost all distinctions (of joy and misery, storm and sunshine, heat and cold, etc.), or to whom the specific attributes of things appear to be contrary and reversed, should be regarded as on the point of death. The man, who sees stars ablaze in the broad day-light or fancies seeing the fiery orb of the sun by night and the mellow disc of the moon by day, or who seems to witness the phenomena of rainbow and lightning even in the absence of any rain cloud, or the formation of a lightning-spangled rain-cloud even in a clear blue sky, is sure to be speedily gathered to his rest. The man, who observes the reflected images of chariots, palaces and aerial cars in the heavens, or sees the embodied images of the fire and sky gods, or to whom the earth

appears to be enveloped in frost or smoke, or enshrouded in a sheet of fine linen, or chequered with cross lines, or blazing with fire, or flooded with water, or to whose sight the Pole Star and the asterism Arundhati (one of the Pliades) and the Milky Way remain invisible, should be reckoned as already with the dead.

The man, who fails to see his own image reflected in a mirror, in the moonlight, or in hot water, or sees but distorted reflections of himself or of any other animal, or of dogs, cows, storks, vultures, ghosts, Yakshas, Rakshas, Pisháchas and Nágas, should be regarded as about to depart this life. The man, to whom fire appears to be free of its natural accom paniment of smoke, or that it is possessed of a colour resembling the hue of the breast feathers of a peacock, should be regarded as doomed, (if happening to be suffering from any disease). On the other hand, these phenomena indicate the approach of a disease in one, who is found to be as yet in the enjoyment of apparent health.

Thus ends the thirtieth Chapter of the Sutrasthánam in the Sushruta Samhitá which deals with prognosis from the perverted functions of the five sense organs.

CHAPTER XXXI.

Now we shall discourse on the Chapter, which deals with the prognosis to be gathered from the altered condition of features **(Chháyá-Viprati-patti-madhyáyam).***

Metrical Text:—The man, whose complexion suddenly assumes a brown, red, blue or yellow shade, should be regarded as already gathered to his rest. The man, who has lost all sense of modesty or propriety, and whose complexion, and whose strength (ojah) and memory have suddenly undergone discolouration or extreme deterioration, should be counted with the dead. Little chance there is of the life of a patient whose lower lip hangs down while the upper one is drawn or turned up, and both of them have assumed a black colour like that of a jamboline fruit. The patient, whose teeth fall out or which have assumed a reddish

* Physicians of the Áyurvedic School, however, observe a distinction between Chháyá (shade of complexion), Prabhá (healthful glow of the complexion), and Varna (natural colour of the complexion) itself. The Chháyá or the shade of one's complexion may be easily distinguished as clear, rough or cool, etc. and can be detected only on a close view. The Prabhá, on the other hand, is visible from a distance and admits of of being divided into seven different types, such as red, yellow, white, brown, greenish, pale, and black. The Varna or the natural colour of the complexion of a man is found to be either fair, black, dusky leaning towards the fair, according to his race and habitation. The term also includes natural modesty, look and ease.

or a dark brown colour, or a colour like that of a Khanjana bird (dark blue), should be reckoned as already gathered to his fathers.

The patient, whose tongue has become furred, swollen, or inert, or is of a black colour, should be considered as already at the gate of death. The patient, whose nose has sunk or become bent, cracked, dried, or who when breathing makes a gurgling sound through the nostrils, should be given up as lost. A patient is certainly quitting this life whose eyes appear to be contracted, or unequal, oblique, or inert, insensitive to light or touch, sunk in their sockets, or bloody, or marked by a copious lachrymation. The patient whose hair appears to have been glued to his head whose eyebrows are contracted and hang down, and whose eyelashes are listless should be considered as about to leave his mortal frame.

The patient, who is incapable of swallowing any food or of holding up his head, and who looks with a kind of fixed stare, with all memories of life fully obliterated, should be deemed as dying on that very day. A wise or prudent physician should give up the medical treatment of a patient, no matter whether strong or weak, who is found to be fainting away every time he is lifted up or seated. The patient, who constantly extends or draws up his lower extremities, or keeps them in a gathered up posture, should be

looked upon as rapidly succumbing. A wise physician should abandon a patient, characterised by the coldness of his breath and extremities and a hurried and intermittent respiration, or who is found breathing with his mouth open, or lips separated.

Similarly, a patient affected with a kind of stupor or insomnia and remaining drowsy, all day long, or fainting at the least attempt of speaking, should be counted with the dead. The patient, who licks his upper lip, or is troubled with eructations, or holds conversations with the departed, should be deemed as already entered into the region of the dead. A man, spontaneously bleeding through the roots of his hairs (pores of the skin) otherwise than in a case of poisoning, should be deemed as dying on that day.

A patient, affected with an up-coursing pain about the cardiac region, like the one which distinguishes a case of Vátáshtilá (appearance of a stone-like lump rising or seated within the thorax and ascribed to the action of the deranged Váyu), accompanied by an aversion to food, etc., should be already reckoned among the dead.

An idiopathic swelling (Shopha) first occurring in either of the lower extremities in a male patient not as a complication of any other disease*, as well as a similar swelling first appearing at the face, or about the region

* Such as Chlorosis, Ascites, Hœmorrhoids.

of the anus in a male or a female patient, is sure to have a fatal termination.

A patient, suffering from cough or asthma attended with dysentery, fever, hic-cough, vomiting and swelling of the penis and the scrotum, should be given up as lost. Excessive perspiration, burning, hic-cough, dyspnœa and hyperpyrexia with a burning sensation of the body, are undoubtedly capable of extinguishing the vital spark even in a strong patient. Similarly, a patient, with a black coated tongue and the left eye sunk in its socket and a foul smell from the mouth, should be given up as lost.

The mouth of a man, who is on his way to the mansions of the god of death, becomes filled with tears, the legs are wet with perspiration, and the pupils of the eyes roll about or become listless.

The patient, whose limbs become all of a sudden abnormally light or heavy, is sure to go to the region of the son of the day-god (Yama.) The patient, whose body emits a fishy, dirty or a fragrant smell, or smells like fat, oil, or clarified-butter, is on the way to the mansions of Death.

The patient on whose forehead lice freely move about, or whose offerings the crows do not eat, or who does not find comfort in any position or place, goes to the mansions of the god of death. A patient, who has

become emaciated and enfeebled, or has been suffering from a complication of such diseases as fever, dysentery, œdema, etc., one supervening another pre-existing malady, should be deemed as beyond the pale of medicine. A ravenous hunger or an unquenchable thirst in a weak patient, who refuses to be appeased or satisfied with sweet, wholesome and palatable food or drink, should be regarded as a fatal indication. A patient exhibiting such symptoms as diarrhœa, an excruciating headache, colic in the intestines, thirst and gradual failing of strength, stands in danger of imminent death. Death is due to the transitory character of life, or it may be attributed to irregular conduct, or to the deeds of one's previous existence transformed into the dynamics of fate.

Ghosts, evil spirits, Pisháchas and monsters of various shapes and denomination, constantly lead men to death. These evil spirits, owing to their natural killing propensities, nullify the efficacies of medicines; and hence it is futile to take in hand the medical treatment of a man who exhibits any of the abovesaid fatal symptoms, and thereby testifies that he has fallen into the clutches of such evil spirits.

Thus ends the Thirty-first Chapter of the Sutrasthánam in the Sushruta-Samhitá which deals with prognosis from perverted features.

CHAPTER XXXII.

Now we shall discourse on the Chapter which treats of the prognosis based on the perversion of the external appearances of the body **(Svabhava-viprati-patti-madhyayam).**

A contrariety of the natural features of any part or member of the body should be looked upon as a fatal indication. The blackness of a limb or a part which is naturally white,* or the whiteness of a black† part, or a naturally red‡ part, or member, etc. assuming any other colour, or a hard§ part becoming soft, and *vice versa*||, or a movable¶ part suddenly becoming fixed, and *vice versa*,** or the contraction (flexion) of an extended part, or the extension or expansion of a contracted (flexible) part, or a short†† part suddenly becoming elongated‡‡, and *vice versa*, or a sudden hanging down of a part or member of the body which does not naturally§§ hang down, and *vice versa*||||, or a sudden increase or decrease of natural temperature of any part, member, or organ of the body, as well as its sudden glossiness, roughness, numbness, discolouration, weakness, or weariness, should be looked upon as fatal symptoms.

* The teeth and the cornea. † The iris. ‡ The tongue and the palate, etc. § Bones, teeth, etc. || Soft parts such as the flesh, fat, etc. ¶ Joints, etc. ** Nose, ears and flesh, etc. †† Head and forehead, etc. ‡‡ Pupils, etc. §§ Hair, nails, etc. |||| Perspiration, urine and feces, etc.

(Similarly) a limb or a part of the body, hanging down from its natural position, or becoming raised or twisted round, or cast obliquely from its natural seat, or dislocated, or protruded, or drawn inward, or suddenly becoming light or heavy without any definite or assignable cause, or a sudden eruption of a coral-coloured rash or Vyanga, should be regarded as indicating a speedy dissolution of the patient in whom they are exhibited.

Likewise, the appearance of veins in the region of the forehead, or an eruption of postules on the ridge of the nose, perspiration on the forehead in the morning, copious lachrymation without any ocular complaint, a sense of being dusted with dried and pulverised cowdung over the face, or the flying of pigeons, Kankas, etc, over one's head, or excessive micturitions or motions of the bowels from an empty stomach, or a suppression of urine or feces even after a hearty meal or draught, is fatal. So also, pain and aching about the breast and the chest, emaciation of the extremities and an œdema of the middle part of the trunk, and *vice versa* ; or an œdema of the upper trunk and emaciation of the lower part, and *vice versa* ; or an œdema of the left half of the body and emaciation of the right, and *vice versa* ; or hoarseness, huskiness, or loss of voice, discolouring of the teeth, nails or of the skin, eruption of white patches on the chest, etc, of the

body, should be deemed as signs which forebode the approaching dissolution of an individual.

Moreover the patient, whose semen, or expectorated or fecal matter does not float on water, or who sees the distorted or bifurcated images of objects, or whose hair shines with a gloss as if anointed with oil, finds his relief in death. A weak dysentery patient with a complete aversion to food, or one who is tormented with thirst even when suffering from a cough, or a man suffering from chronic catarrh with a complete loathing for food, or from gastritis (Sula) with aphonia, and vomiting frothy blood and pus, should be regarded as past all cure. A patient, enfeebled and emaciated through fever, cough and an œdematous swelling of the face and the extremities, and showing the greatest aversion to food, and the muscles of whose calves, shoulders and thighs have grown loose and flabby, should be considered as awaiting the call of death.

A patient, suffering from fever, cough, and vomiting, or passing with the stool, in the evening, undigested food matter eaten in the morning, would die of asthma. The patient, who falls to the ground bleating like a goat, and exhibits such symptoms as a rupture of the testes, numbness of the penis, drooping of the neck and introsusception of the penis, should be considered as past all cure. The patient, whose heart is first felt

dry followed by becoming covered with a slimy moisture of the whole body, as well as one who strikes a stone with a stone, or a piece of wood with a piece of wood, or who cleaves in two blades of dried grass, or one who bites his lower lip and licks the upper one, or draws his ears and tears his hair, or dis-honours the gods and the Bráhmanas, as well as his own physician, friends and relations, should be regarded as beyond the pale of medicine.

Similarly, a disease, due to the influence of a malignant planet occupying, either through its retrogade or zigzag movement, an inauspicious position in relation to the natal asterism of the patients, is sure to terminate in death. A man, struck by lightning or a falling meteor, baffles all medicinal skill. Similarly, a disease due to the fact of one's own house, wife, bed, seat, conveyance, or riding-animal assuming any ill-omened features, or a disease originated through the use of gems, utensils, garments, etc. of forbidden or inauspicious character usually ends in death (Aristam).

Authoritative verses on the Subject :—A disease, appearing in an enfeebled and emaciated subject and refusing to yield to a course of proper medicinal treatment, and which becomes rather aggravated by the administraticn of proper medicinal remedies or antidotes, necessarily portends the death of the patient.

A Mahávyádhi* (lit :—a deep seated disease) suddenly abating in a person in whom nourishment fails to produce any perceptible effect forebodes a fatal termination. The physician, who can detect and fully interpret these fatal indications, is honoured by the king for determining the curable or incurable nature of a disease.

* Any deep seated disease, which seriously affects the vital principles of a man, is called Mahávyádhi. Diseases such as Prameha, Vátavyadhi, Shosha, etc. have also been included within the category in the Chapter on Káya-chikitshá. A general amelioration or recovery in these cases being natural, on account of their deep-seated character, a sudden abatement is usually fraught with fatal consequences. **(Arishtam.)**

Thus ends the thirty-second Chapter of Sutrasthanam in the Sushruta-Sámhita which deals with the prognosis based on perversion of the natural appearances of the body.

CHAPTER XXXIII.

Now we shall discourse on the Chapter, which treats of incurable diseases **(A'varaniya-madhyayam).**

Metrical texts :—Hear me describe, Oh child, the diseases which being attended with many a distressing and supervenient symptom, and being treated without rejuvenating and restorative medicines, speedily assume incurable character. The following eight diseases, viz :—**Maha-Váta-vyádhi** (paralysis or diseases affecting the nervous system in general), **Prameha** (morbid discharges from the urethra), **Kushtha, Arsha** (piles), **Vagandara** (fistula in ano), **Ashmari** (stone in the bladder), **Mudha-garbha** (false presentations) and the eight kinds of **Udari** (abdominal dropsy) are, by their very nature, extremely hard to cure. A physician with any regard to professional success should abandon a patient laid up with any of the preceding diseases, marked by complications such as, emaciation of the body, loss of strength, dyspnœa, palpitation, wasting, vomiting, dysentery and hic-cough, fever and swoon. A case of Vátavyádhi developing symptoms, such as œdematous swelling, complete anesthesia of the affected part, breaking and palsy (shaking) of the affected limbs, distention of the abdomen, with aching and colic pain, usually ends in death.

A case of Prameha, attended with indications as are to be found under the head of that disease, as well as an increased secretion of urine charged with semen, albumen, etc. and eruptions of specific abcesses (known as Sharávika etc.) is sure to have a fatal termination.

A case of Kushtha (leprosy) characterised by spontaneous bursting of the affected parts, hoarse voice, and blood-shot eyes, and not proving itself amenable to the five-fold appliances of emetics, purgatives, etc. (Pancha-Karma), usually ends in death. A case of piles attended with thirst, aversion to food, colic pain, excessive hæmorrhage, anasarca (Shopha) of the locality, and dysentery is soon relieved by death.

A patient suffering from an attack of fistula in ano, characterised by an emission of flatus (Váyu), urine, fecal matter, worms and semen through the ulcerated locality, should be given up as lost. A patient suffering from the presence of stone, gravel, or urinary concretions (Sharkará) in the bladder and attended with œdema of the scrotum and the umbilicus, retention of urine, and colic pain in that organ, is soon relieved of his pain by death.

In a case of false presentation (Mudhagarva) an extreme constriction of the mouth of the uterus

(os uteri), development of the peculiar pain of child-birth, which is known as Makkalla, tonic rigidity of the vagina, and situation of the placenta (Apará) at a wrong place (false pregnancy) and other symptoms (convulsions, cough, dyspnœa, vertigo etc.) described in the Chapter on the Etiology of that disease, forebode the death of the parturient woman.

A patient suffering from abdominal dropsy (ascites) marked by pain at the sides, aversion to food, œdematous swelling of the limbs, dysentery and fresh accumulation of water even after he had been tapped, or evacuated with the exhibition of purgatives, should be given up as incurable. A case of fever in which the patient becomes restless and tosses about in the bed in an unconscious state, and lies extremely prostrate, or is incapable of sitting or of holding himself up in any other position and is besides afflicted with rigor though complaining of a burning sensation within, is sure to end in death.

Similarly, a fever patient developing such symptoms as, the appearance of goose flesh on the skin, an aching gathered-up pain in the cardiac region, blood-shot or congested eyes, and breathing through the mouth should be deemed as already at the threshold of death. Similarly, a case of fever, attended with hic-cough, dyspnœa, thirst, fits of unconsciousness or fainting, and rolling of the eye-balls, proves fatal in a weak and

emaciated patient, who is found to breathe hurriedly through the mouth.

A case of fever proves fatal in a patient, found to be restless or to lie inert in an unconscious (subcomatose) state with dull, clouded, or tearful eyes, or prostrate, somnolent and extremely emaciated. A fever patient and especially an old one extremely enfeebled and emaciated, readily succumbs to an attack of dysentery in which laboured respiration, colic and thirst supervene.

An attack of Phthisis (Yakshmá) leads its victim to death in whom glossiness of the eyes, aversion to food, expiratory (subclavicle) dyspnœa, difficult and up-drawn breathing (**Urdha-Shvása**), and painful and and excessive micturition (diarrhœa according to others), manifest themselves. A patient suffering from an attack of Gulma (abdominal gland), and on the verge of death, exhibits such symptoms as laboured and painful respiration, colic pain, unquenchable thirst, aversion to food, loss of consciousness, anæmia, and the sudden obliteration of the Granthi (tumorous or glandular formation).

A person laid up with an attack of Vidradhi (abscess) and exhibiting such fatal symptoms as distension of the abdomen, retention of urine, vomiting, hiccough, thirst, pain of a varied character (such as aching, excruciating, etc.) and dyspnœa, should be regarded

as to have approached the goal of his life. A patient suffering from an attack of jaundice or chlorosis marked by yellowness of the teeth, nails, and of the conjunctivæ, and seeing everything yellow, is not expected to long survive the occurrence of the attack.

A person laid up with an attack of Hæmoptysis, largely vomiting blood, and viewing everything red or blood-coloured with his blood-shot eyes, should be regarded as about to depart this life. A person, insane, extremely enfeebled and emaciated, and sitting up sleepless in the night, or with eyes constantly lifted upward or cast down, would be soon relieved of his earthly suffering. A case of Apasmára (epilepsy) proves fatal in a person, who is extremely emaciated, and whose eye-brows are constantly moving and whose eyes seem fixed in an unnatural (oblique) stare.

Thus ends the the thirty-third Chapter of the Sutrasthánam in the Sushruta Samhitá which treats of incurable diseases.

CHAPTER XXXIV.

Now we shall discourse on the Chapter which treats of the mode of preserving the life of a king whose soldiers are on march **(Jucta-Seniya-madhyayam).**

Metrical Texts :—I shall presently describe the measures, which a physician in the king's service should adopt with a view to protect the life of his royal master, specially from acts of secret poisoning, while mobilizing his armies to invade the territory of a neighbouring monarch accompanied by his chiefs and ministers.

A common practice of the enemy under such circumstances is to poison the wells on the roadside, the articles of food, the shades of trees (shadowy places) and the fuel and forage for cattle; hence it is incumbent on a physician marching with the troops, to inspect, examine and purify these before using any of them, in case they be poisoned. The symptoms and medical treatment will be fully described and discussed later on in the part, entitled the **Kalpa Sthánam.**

Men, learned in the lore of the Atharva Veda, hold that death may be attributed to a hundred and one different causes, (lit: deaths of a hundred and one kinds) of which one (which is that of an old man

naturally and spontaneously expiring) is called natural, while the rest are unnatural or traumatic in their origin. Physicians conversant with the curative virtues of drugs and minerals, and priests well versed in the Vedic Mantras, should jointly protect the king from death, whether due to idiopathic (Doshaja) or extrinsic causes.

The god Brahmá disclosed to the world the Atharva Veda together with the eight allied branches of Vedic literature and the science of medicine. And since a priest (Bráhmana) is well-versed in the aforesaid branches of study, a physician should act subserviently and occupy a subordinate position to the priest. The death of a king usually leads to a political revolution or to popular disturbances and brings about a confusion among the vocations of the different orders of society. The growth of population markedly suffers through such catastrophies.

As the external features of a king resemble those of a common person, while his (king's) commanding majesty, sacrifice, forbearance and fortune are super-human (in their nature and intensity), therefore a man should, who is prudent and seeks his own good, think reverentially of his king, and propitiate him with tokens of loyalty and allegiance as if he were a deity. A physician, fully equipped with a supply of medicine, should live in a camp not remote from the royal

pavilion, and there the persons wounded by shafts of arrows or any other war projectiles, or suffering from the effects of any imbibed poison, should resort to him (the physician), conspicuous like a triumphant ensign for his fame and professional success. A physician, well versed in his own technical science, and commanding a fair knowledge of other allied branches of study as well, is glorified by his king and the Bráhmanas, and is like a banner of victory an ennobling ornament to the state.

The physician, the patient, the medicine, and the attendants (nurses) are the four essential factors of a course of medical treatment. Even a dangerous disease is readily cured, or it may be expected to run a speedy course in the event of the preceding four factors being respectively found to be (qualified, self-controlled, genuine and intelligently watchful).

In the absence of a qualified physician the three remaining factors of treatment will prove abortive like a religious sacrifice performed with the help of an Udgátri,* a Hotri,† and a Bráhmana, in the absence of an Adhvaryam.‡ A qualified physician is alone capable of relieving the pain of many a suffering patient, just as

* **Udgátri** :—One of the four principal priests at a sacrifice, who chants the hymns of the Sáma Veda.

† **Hotri**—A priest, who recites the (Riks) prayers of the Rik Veda at a religious sacrifice.

‡ **Adhvaryyu**—A priest of the Yayur Veda, whose duty is to cast the sacrificial beast into the fire.

only a helmsman is capable of taking his boat across a river even without the help and co-operation of a single oarsman.

Qualities of a physician :—A physician, who is well versed in the science of medicine and has attended to the demonstrations of surgery and medicine, and who himself practises the healing art, and is clean, courageous, light-handed, fully equipped with supplies of medicine, surgical instruments and appliances, and who is intelligent, well read, and is a man of ready resources, and one commands a decent practice, and is further endowed with all moral virtues, is alone fit to be called a physician.

Patient :—The patient, who believes in a kind and all-merciful Providence, and possesses an unshakable fortitude and strong vital energy, and who is laid up with a curable form of disease, and is not greedy, and who further commands all the necessary articles at his disposal, and firmly adheres to the advice of his physician, is a patient of the proper or commendable type.

Medicine :—The (proper) medicine is that which consists of drugs grown in countries most congenial to their growth, collected under the auspices of proper lunar phases and asterisms, and compounded in proper measures and proportions, and which is pleasing (exhilarating to the mind and has the property of

subduing the deranged bodily humours without creating any discomfort to the patient, and which is harmless even in an overdose, and is judiciously administered at the opportune moment.

Nurse :—That person alone is fit to nurse or to attend the bedside of a patient, who is cool-headed and pleasant in his demeanour, does not speak ill of any body, is strong and attentive to the requirements of the sick, and strictly and indefatigably follows the instructions of the physician.

Thus ends the thirty-fourth Chapter of the Sutrasthánam in the Sushruta Samhitá, which treats of preserving the life of a king whose soldiers are on march.

CHAPTER XXXV

Now we shall discourse on the Chapter which deals with clinical observations **(Áturopakramaniya-madhyáyam).**

A physician should first observe the vital condition (Áyu) of the patient before commencing the medical treatment. After that, the nature of the disease, the country and season of the year in which it has made its appearance, as well as the state of digestion, age, body, strength, disposition, habit, previous medicine, natural temperament and the power of endurance of the patient, etc. should be observed and carefully examined.

Characteristic features of a long lived man :—Men, the dimensions of whose hands, legs, sides, back, nipples of the breast, teeth, face, shoulders and forehead exceed the average, as well as those whose eyes, arms, phalanges and fingers are longer than the ordinary ones should be regarded as going to live long. Those who have broad chests, broad eye-brows with broader spaces intervening between the muscles of the breasts, and who take in deeper inspirations of breath, will be long lived. Those whose necks, thighs, and generative organs are shorter than those of the average type, or those whose voices and umbilical cavities are deep, and whose breasts are unraised an d thick-set, and external ears broad, fleshy and hairy,

with the occipital region fully developed and protruded, will enjoy a longer span of life. Men, on whose bodies sandal paste and similar preparations begin to dry up from the head downward, while those applied over the chest become absorbed later, should be looked upon as persons endowed with an uncommonly longer duration of life.

The medical treatment of such a patient may be unhesitatingly taken in hand by a physician. Persons, exhibiting bodily features other than those described above, should be looked upon as short-lived men, while those, who are possessed of features common to men of both the above mentioned types, should be considered as keeping the mean between them as regards longevity (Madhyamáyuh).

Authoritative verses on the subject :—A man, with deep-set bones, ligaments, and veins, and tough and thick-set limbs, and firm and unflinching sense organs, as well as one whose body gradually develops a more and more symmetrical shape, should be looked upon as a **long-lived man** The man, who has not ailed for a single moment even from the day of his birth, and has been getting more and more strong-limbed every day through the cultivation of his inborn sense and a better knowledge of the laws of health, is sure to live to a good old age in the full enjoyment of his senses and intellect.

Madhyamáyuh :—Now, hear me describe the bodily features of a man of a mean or average duration of life (**Madhyamáyuh**). The man, the integuments of whose lower eyelids are marked with two or three well-marked and extended lines or furrows, and whose legs and external ears are thick and fleshy, and the tip of whose nose is turned a little upward, and who has up-pointed lines directly running through the middle of his back, is expected to live up to the ripe old age of seventy years.

Specific traits of a short-lived man :—Now, hear me describe the specific traits, which characterise the body of a short-lived man. A man with short phalanges of fingers, a narrow back, and external ears abnormally raised up from their natural seats, and who is possessed of a large penis, a high nose, a breast covered with ringlets of curly hair, and who exposes the gums of his teeth, or whose eyes roll while talking or laughing, is not expected to see more than twenty-five summers.

We shall now give the exact measures of the different limbs and members of the body for the better ascertainment of the duration of life of a patient under investigation.—The legs, the arms, and the head are called the limbs of the body, while their component parts are called the members (Avayavas). The great toe of a man, or the one next to it, measured

with his own fingers should measure two fingers' width in length, the lengths of the other toes (the third, fourth, and small ones) successively diminishing by a fifth part of that of his middle finger (Pradeshini).

The fore-sole and the sole proper respectively should measure four fingers' width in length and five fingers' width in breadth. The heel of the foot (Párshni) should measure five fingers' width in length and four fingers' width in breadth. The foot itself should measure fourteen fingers' width in length. The girth of the foot, as well as the circumference of the middle parts of thighs and knee-joints, respectively should measure fourteen fingers in width.

The part of the leg between the ankle and the knee-joint should measure eighteen fingers' width in length, while the part between the joint of the waist and the knee-joint should measure thirty-two fingers' width in length, the entire leg thus measuring fifty fingers' width in all. The length of the thigh is the same as that of the part lying between the heel and the knee-joint (Janghá).

The scrotum, the chin, the (two rows of) teeth, the exterior line of the nostrils, the roots of the ears, and the intervening space between the eyes, should respectively measure two fingers' width in length. The non-erected penis, the cavity of the mouth, the two rows of teeth, the nose, the height of the neck,

the ears, and the forehead, and the space intervening between the pupils of the eyes measure four fingers' width in length.

The entire length of the vaginal canal should measure twelve fingers' width. The space lying between the penis and the umbilicus, as well as the one intervening between the chest and the upper end of the throat (lit : neck), like the one lying between the tips of the two nipples of the breast, should measure twelve fingers' width in length. The length of the entire face should measure twelve fingers' width. The girth round the wrist and the fore-arm of a man should measure twelve fingers.

The girth round the knee-joint is sixteen fingers' width and the length between the wrist and the elbow should measure sixteen fingers' width. The part of the arm between the elbow and the tip of the middle finger should measure twenty-four fingers' width in all. The length of the entire arm measures thirty-two fingers' width, and the girth round the thighs should measure thirty-two fingers' width. The palm of the hand should measure six fingers' width in length and four fingers' width in breadth. The space between the bottom of the ball of the thumb to the root of the index finger, as well as the space between the root of the ears to the outer corner or angle of the eyes, should measure five fingers' in length. The middle finger should

measure five fingers' width in length. The index and the ring-fingers respectively should measure four and a half fingers in length, the thumbs and the little fingers respectively measuring three and a half fingers.

The fissure of the mouth should measure four fingers in length. The girth round the neck should measure twenty fingers. Each of the cavities of the nostrils should measure one and three quarter parts of a finger in length. The region of the iris occupies a third part of the entire area of the cornea. The region of the pupil should measure a ninth part thereof.

The arch extending from the hairy extremity of the templar region to the middle point of the back of the head should measure eleven fingers. The distance between the middle of the head and the terminal point of the hairy portion of the neck should measure ten fingers in length. The girth of the neck measured from the back of one ear to that of the other should be fourteen fingers. The length of the pelvic region of a young woman measured from below the anterior side of the thigh joints should be found to be equal to the breadth of the chest (Vakshah) in a male subject (twelve fingers).

The thigh of a woman should be eighteen fingers in breadth and equal to that of the waist of a man. The entire length of a male human body should be a hundred and twenty fingers.

Authoritative verse on the subject :—An intelligent physician should regard the organism of a man of twenty-five or of a woman of sixteen years of age, as fully developed in respect of the maturity of the seven fundamental principles of the body such as, serum, blood, &c). The dimensions of the different limbs and members of the body, laid down above, should be understood as to have been measured by the standard of one's (man's or woman's) own finger's width, and a person, whose limbs and organs are found to correspond to the above-said measures, is sure to live to a good and hearty old age, as a necessary and befitting sequel to a happy and prosperous career in life. In the case of a partial correspondence of one's limbs and organs to the above-said measures and proportions, a man should be regarded as having an average life and prosperity. A person whose limbs fall short of the abovesaid measures should be regarded as an indigent and short-lived person.

Physical temperament (Sára) :—Now we shall describe the characteristic traits of the different preponderant principles (Sára) or temperaments of the human organism. A man, who is possessed of a good retentive memory, and is intelligent, valorous and cleanly in his habits, and whose mind is graced with such rare and excellent virtues as, purity of thought, and a fervent and unflinching devotion to gods and the reverend, and who exerts himself for the furtherance

of the absolute good, should be regarded as a man of Satvasára (psychic or illumined) temperament.

A man with glossy, white and close-set bones, teeth, and nails and who has begotten a large family of children, and shows a marked amative tendency, should be looked upon as a man in whom the principle of semen decidedly preponderates. A man with a thin and sinewy body, and who exibits traits of excessive strength, and possesses a deep resonant voice, and a pair of large and handsome eyes, and who is successful in every walk of life, should be looked upon as one in whom the principle of marrow preponderates. A man with a large head, and a large pair of shoulders, and having firm teeth, bones, cheek-bones, and finger-nails, should be considered as one in whom the principle of bone preponderates.

A man with a large and bulky body, and who is capable of enduring a large amount of fatigue or physical exertion, and who naturally talks in a soft and melodious voice, and whose bodily secretions such as urine and perspiration are characterised by coldness should be regarded as one of a fatty temperament. A man with an erect and upright frame, and deep-set bones, and joints in thick layers of flesh, should be regarded as one in whom the principle of flesh predominates.

A man, whose finger nails, eyes, tongue, palate,

lips, palms of hands and soles of feet are glossy, and tinged with a shade of red, should be looked upon as one in whom blood forms the essential and predominant principle. A man with a soft, smooth and pleasant skin and hair should be considered as one in whom serum (Tvak) forms the essential principle of the body. In respect of worldly success and longevity, men of each of the aforesaid types should be successively judged inferior to men belonging to the one preceding it in the above order of enumeration.

Authoritative verse on the subject :- A qualified physician should examine the duration of life in a patient with the help of the aforesaid measures of limbs and the essential bodily principles, before proceeding to take up his medical treatment, and his professional success should be decidedly increased thereby.

All the diseases, whose names have been specifically enumerated before, may be grouped under any of the three different heads as the **curable, the suppressible** (Yápya) and the **incurable** (lit : fit to be pronounced as hopeless).

Each of these different types, in its turn, should be carefully observed so as to determine whether it is a primary or an independent disease, or merely an accessory or sympathetic one, or the premonitory indication of an incipient distemper in its incubative stage.

An **Aupasargika** (sympathetic) disease is merely a symptom developed in the course of an original or primary malady, and which has its foundation in the very nature or component factors of the pre-existing distemper. A disease, which manifests itself from the commencement of a case and is neither an accessory symptom, nor a premonitory indication of any other distemper, is called a **Prák-kevalam** (primary or original) one. A disease which indicates the advent of a future or impending malady is called a **Purvarupam** (premonitory stage or indication of a disease).

The medicinal remedy to be administered in any particular case should be selected with an eye to the curative virtues of each of its components, so as not to clash with the nature (cause) of the disease and its accompanying symptoms, and to prove simultaneously soothing to both of them. On the contrary, a violent unfavourable symptom should be first attended to and checked in a case where it would be found to have grown stronger and more distressing or dangerous than the original malady in course of which it has been developed.

A primary or independent malady, unattended with any of the distressing or unfavourable symptoms, should be treated according to its indications and the nature of the deranged humours involved therein, while in an incubative disease the treatment should

consist in subduing a premonitory symptom as soon as it would make itself manifest.

Authoritative Verse on the subject :—As there is not a single disease, which can make its appearance without the participation of any of the deranged bodily humours, a wise physician is enjoined to administer medicines according to the specific features of the deranged humours involved in a disease whose nature and treatment have not even been described in any book on medicine. The different seasons of the year have been described before.

Metrical Texts :—In the cold season, a disease should be treated with measures and remedies endued with the virtue of destroying or warding off cold, while in summer the medicinal treatment should consist of measures and applications capable of allaying the heat. The medical treatment of a disease should be commenced just at the opportune moment, which should not be allowed to expire in vain under anycircumstances whatsoever. A course of medical treatment commenced at an inopportune moment, or not resorted to at the advent of its proper time, as well as over or insufficient medication, proves abortive even in a curable type of disease. The proper medical treatment (of a disease) is that which successfully copes with the malady under treatment, and arrests the recrudescence of a fresh one by way of sequel, and not

that, which, though subduing a particular distemper, is immediately followed by a new one.

It has been demonstrated before that the food of a man is digested only with the help of the digestive fire or heat (Páchakágni), which may be divided into four different kinds (states). One of these kinds is due to it not being in any way affected by the deranged humours of the body, while the other three are respectively ascribed to the fact of their becoming so deranged. The digestive fire or heat becomes irregular or fitful (**Vishamágni**) through the action of the deranged Váyu, becomes keen, through the action of the deranged Pittam, and dull or sluggish, through the action of the deranged Kapham. The fourth kind (**Sama**) continues in a state unaffected by any of the morbid humoural constituents of the body owing to their maintaining the normal equilibrium.

Sama'gni and Vishama'gni.:—The digestive heat, which fully digests the ingested food at the proper time without the least irregularity, thus reflecting the continuance of the bodily humours in their normal state, is called **Samágni.** The digestive heat which is irregular in its action, and which sometimes helps the process of complete digestion, and produces distension of the abdomen, colic pain, constipation of the bowels, dysentery, ascites, heaviness of the limbs,

rumbling in the intestines, and loose motions (diarrhœa) at other times, is called **Vishamágni.**

Tikshnágni :—The digestive heat, which helps the digestion of even a heavy meal within an incredibly short space of time, is called " Keen " (**Tikshnágni**) and which becoming abnormally augmented begets an excessive or voracious appetite (**Atyágni**), helps a glutton to digest his frequent meals, and produces a parched throat, palate and lips, heat and other discomforts.

Mandágni :—The digestive fire or heat which causes the tardy digestion even of a scanty meal, and produces heaviness of the abdomen and head, cough, difficult breathing, water-brash, nausea, and weariness of the limbs simultaneously with the taking thereof, is called dull or sluggish (Mandágni).

Metrical Texts :—The digestive fire of the Vishama kind brings on diseases characterised by the derangement of the Váyu. A keen (Tikshna) digestive fire brings on bilious (Pittaja) affections, while a sluggish (Manda) fire gives rise to diseases marked by a deranged state of the Kapham. Endeavours should be made to keep the digestive fire of the **Sama** type (normal or regular appetite*) in an unimpaired state.

* There is a difference between "Agni" and "appetite." Agni includes bile and pancreatic secretions, and hence indicates the state of one's digestion. Appetite, though not an unerring indicator of the process, is the effect of Agni.

The one known as Vishama (irregular) should be corrected by a diet consisting of emollient, acid or saline substances. In a case of abnormally keen digestive fire, the medical treatment should consist in prescribing purgatives and a diet in the composition of which sweet, cooling, and fatty or albuminous matters largely enter. The same treatment should be adopted in (Atyágni) as marked in cases of voracious appetite, and a diet consisting of buffalo-milk, or its curd (Dadhi) and liquid buffalo-butter should be prescribed for the patient in addition. Emetics should be administered in a case of dull or sluggish digestion (Mandágni), and the patient should be restricted to a diet consisting of articles of a pungent, astringent or bitter taste.

Metrical Texts :—The fire, that burns within a person, is godly in its subtle essence, and possesses the divine attributes of atom-like invisibility, weightlessness, etc., and is the digestant of food. It takes up the lymph chyle of different tastes for the purpose of digestion, and is invisible owing to its extremely subtle essence. The three vital Váyus known as Prána, Apâna and Samâna, located in their own spheres within the organism, feed it and keep it burning.

The three stages of man may be roughly described as (1) infancy or childhood, (2) youth or middle age, and (3) old age or dotage. Childhood extends up to the

sixteenth year of life, and children may be divided into three different classes, according as they are fed on milk, or on milk and boiled rice or on boiled rice alone. A child lives exclusively on milk up to the first year of its life, it is fed on milk and boiled rice (hard food) up to the second year, and is thenceforward nourished with boiled rice (hard food).

The middle age of a man extends from the sixteenth to the seventieth year of his life, and exhibits the traits of growth, youth, arrest of development and decay.

The process of growth or building goes on up to the twentieth year of life, when youth or the age of maturity sets in and holds sway over the body of a man up to the thirtieth year of his life,—the strength, semen, and all the organs and vital principles of the body attain (their) full maturity at the age of forty. Thenceforth decay gradually sets in up to the seventieth year of life. After that the strength and energy of a man dwindle day by day. The organs and virility grow weak and suffer deterioration. The hair turns to a silvery white, the parched skin looks shrivelled and becomes impressed with marks of dotage (crow's feet-marks). The skin hangs down and becomes flabby, the hair begins to fall off, and symptoms of alopecia mark the smooth, sheen and balded pate. The respiration becomes laboured and painful. The body, worn out like an old and dilapidated building, shakes with fits of

distressing cough. Such a man is incapable of all acts, and does but imperfectly pérform all bodily functions. He has grown old.

The dose of medicine should be increased with the age of a patient till the age of decay, and reduced after the expiry of the seventieth year to the quantity (which is usually prescribed for an youth of sixteen).

Authoritative verses on the Subject :—Kapham is increased during the years of childhood and Pittam in middle age ; while an increase of Váyu (nervous derangement) marks the closing years of life. The use of strong or drastic purgatives, and cauterisation are alike prohibited in cases of children and old men. They should be used only in weakened or modified forms if found indispensably necessary.

It has been stated before that the body of a person is either stout, thin or of an average (middling) bulk. A stout person should be reduced in bulk with depletive measures, while a physician should try to make a thin patient gain in flesh. A human body, which is neither too thin nor too stout, should be made to maintain its shapely rotundity.

We have already discoursed on the strength of the body. Now in a particular case under treatment, it is primarily incumbent on the physician to enquire whether the patient is naturally weak, or has become

so through a deranged condition of the bodily humours or old age. And since it is the strength of a patient which makes all remedial measures (such as cauterisation, etc.) possible, it should be regarded as the grandest auxiliary to a medical treatment of whatsoever nature it may be.

Metrical Texts :—There are some men who are strong though thin ; while others are weak, though stout ; and accordingly a physician should determine the bodily strength of a patient by enquiring about the capacity of his physical endurance and labour. Sattvam or fortitude denotes a kind of (stoic) indifference of one's mind to sensations and sources of pleasure or pain.

A man of strong fortitude (Sáttvika temperament) is capable of enduring everything, or any amount of pain by repressing his mind with the help of his will or intellect. A man of a Rájasika turn of mind (strong, active, energetic) may be made to patiently submit to a course of painful medical treatment by means of persuasive counsels and the logic of the inevitable, whereas a man of a Támasika temperament (a worldly cast of mind characterised by Nescience) is simply overwhelmed at the prospect of bodily pain.

Later on, we shall have occasion to deal with the different types of physical treatment and of remedial agents in general. A particular country, or a season

of the year, a particular disease or a peculiar mode of living, any particular kind of physical labour or exercise, or the specific properties of the water of any particular locality, or day sleep, or a juice of any particular taste, is or are said to be congenial (Sátmya) to a man, or a man is said to be naturalised to these conditions and environments, when they fail to produce any injurious effect on his health, though naturally unwholesome to others.

Metrical Texts :—A thing of any taste whatsoever, or any kind of habit or physical exercise is said to be congenial to a man which, instead of in any way telling on his health, contributes to his positive pleasure and comfort.

Features of an Anupa country :—A country may be classed either as an Ánupa, Jángala or a **Sádhárana** one, according to its distinctive physical features. An **Ánupa** (watery or swampy) country contains a large number of pools, and is wooded and undulated with chains of lofty hills traversing its area, and which is impassable owing to its net-works of rivers and sheets of accumulated rain-water rippling before the currents of the gentle, humid air. It is inhabited by a race of stout, shapely and soft-bodied men, susceptible to Vátala and Kaphaja diseases.

Features of Ja'ngala and Sa'dha'rana countries :—The country, which presents a flat

surface and whose dull monotony is enlivened here and there by scanty growths of thorny shrubs and the tops of a few isolated hills or knolls, and in which the waters from springs and wells, accumulated during the rains, become nearly drained, and strong gales of warm wind blow (during the greater part of the year) making its inhabitants, though thin, strong, tough, and sinewy in their frames, subject to attacks of diseases, is called **Jángala.** A country, which exhibits features common to both the aforesaid classes, is called **Sádhárana** or ordinary.

Authoritative Verses on the Subject :—A country derives the epithet of Sádhárana from the ordinary character of its heat, cold and rainfall, and from the fact of the bodily humours maintaining their normal state of equilibrium within its confines. A disease originated in, and peculiar to a particular country fails to gain in intensity, if brought over to, and transplanted in a country of a different character. A man, who observes a regimen of diet and conduct soothing to the deranged bodily humours accumulated in the country he has come from, and aggravated and manifest in the shape of a disease in the country he has been living for the time being, need not apprehend any danger from the altered conditions of his new abode, for the fact of his not observing a regimen of diet and conduct regarded beneficial in consideration

of the physical features of the latter place. A disease of recent growth or origin unattended with any distressing or unfavourable complications, and unsuited to the nature of the country*, the season of the year,† the temperament,‡ and § the adopted or congenial or naturalised traits of the physique of a patient with a regular and unimpaired state of digestion (Samágni), and who exhibits traits of strength, fortitude and longevity and commands the co-operation of the four commendable factors of a course of medical treatment, readily yields to medicine.

A disease, which is marked by features other than those described above, should be regarded as incurable, while the one exhibiting traits common to both the abovesaid types, should be looked upon as extremely hard to cure.

In the case of a former medicine proving abortive, a different one should not be resorted to as long as the effect of the first would last, inasmuch as a mixture or a confusion of medicinal remedies tends to produce a positively injurious effect. A medicine or any medicinal

* As the development of a disease due to the deranged Kapham in a country of the Jángala type.

† As the attack of a bilious distemper in forewinter, or of a Vátaja malady in autumn, or of a Kaphaja affection in summer.

‡ As the appearance of Kaphaja disease in a patient of bilious temperament.

§ As the appearance of a Kaphaja disease in a subject habituated to the use of viands of pungent taste.

measure, failing to produce any tangible effect, may be repeated in quick succession in a difficult or dangerous disease, if it be empirically found to be beneficial in the case under treatment. The intelligent physician, who, considering the nature of the season, etc., fully conforms to the abovesaid rules of medical treatment, conquers the bodily distempers and dispels the gloom of Death from the world with his medical skill.

Thus ends the Thirty-fifth Chapter of the Sutrasthánam in the Sushruta Samhitá, which treats of clinical observations.

CHAPTER XXXVI.

Now we shall discourse on the Chapter, which treats of miscellaneous remedies for swellings, etc. **(Mishraka-madhyayam).***

Metrical Texts :—A medicinal plaster, composed of Mátulanga, Agnimantha, Devadáru, Mahaushdham, Ahinsrá, and Rásná pasted together and applied to the seat of the affection, leads to the resolution of a swelling, due to the action of the deranged **Váyu.**

A plaster composed of Durvá, Nalamulam, Madhukam, and Chandanam, as well as plasters composed of drugs of cooling properties,† brings about the resolution of an inflammatory swelling of the **Pittaja type**, and proves similarly beneficial to a traumatic swelling, or to one which has its origin in the vitiated condition of the blood.

Measures, laid down in connection with a swelling resulting from the effects of poison, would lead to the resolution of a Pittaja swelling as well.

* The nomenclature of the chapter is based. according to certain authorities, on the fact of its jointly treating of eight principal processes of absorption, suppuration, spontaneous bursting, etc. of a swelling; while some there are who hold that the name of the chapter is derived from the fact of its containing remedial measures commonly (Mishrakam) beneficial to swellings and ulcers.

† Belonging to the groups (Gana) of medicinal herbs, which go by the names of their first components, such as the Kákalyádi group (Gana), the Utpaládi group etc.

A plaster, composed of Ajagandhá, Ashvagandhá, Kálá, Asaralá, Ekaishiká, and Ajashringi pasted together, and applied to the spot, leads to the resolution of a **Kaphaja** swelling (appearing at any part of the body).

A plaster, composed of the components of the abovesaid groups of medicinal drugs and Lodhram, Pathyá, Pinditakam, and Anantá, brings about the resolution of a swelling due to the simultaneous derangement of the three fundamental humours of the body (Sánnipatikam).

A medicinal plaster, prescribed for a swelling due to the deranged Váyu, should be applied by mixing it with a little rock salt, acid (Amla), and oil or clarified butter. Similarly, a plaster, prescribed for the resolution of a Pittaja swelling, should be applied cold, and with a little quantity of milk added to it. A plaster for the resolution of a Kaphaja swelling should be applied warm to the affected part, and with the addition of a considerable quantity of an alkali and cow's urine.

Pa'chana Plasters :—A plaster composed of the seeds of Shana, Mula, Shigru, Tila and Sarshapa, Yava-powder, Kinva (enzyme), and linseed pasted together, or one consisting of thermogenetic drugs (such as Kustha, Aguru, etc.), would establish suppuration in a swelling.

Darana Plasters :—A plaster composed of Chiravilva, Agnika, Danti, Chitraka, Hayamáraka and the dung of pigeons, vultures and storks (Kanka) pasted together, would lead to the spontaneous bursting of a swelling. An alkali, or its ingredients should be regarded as a powerful auxiliary in bringing about the spontaneous bursting of a swelling.

Pidana Plasters :—A plaster composed of the roots and bark of slimy trees (Shálmali, Shelu, etc.), or of barley, wheat, and Másha pulse powdered together, would increase the secretion of pus from an ulcer, or a swelling that has burst.*

Shodhana Plasters :—A Kasháya† (decoction) of Shankhini, Ankota, Sumanah, Karavira, and Suvarchchalá, or of drugs belonging to the group (Ganas) known as the Áragvadádi-Varga, should be used in washing and purifying (asepsising) the contents of an ulcer, or a secreting swelling.

Shodhana Varti :—A lint saturated with a plaster of Ajagandhá, Ajashringi, Gavákshi, Lángaláhvayá, Putiká, Chitraka, Páthá, Vidanga, Elá, Renuka, Tri-katu, Yavakshára, the five kinds of salt, Manahshilá,

* The plaster should be applied all round the swelling, leaving its head free and exposed.

† A decoction with one part of a drug mixed with four, eight or sixteen parts of water, the whole being boiled down to a quarter part of the entire quantity.

Kásisa, Trivrita, Danti, Haritála and the Saurashtra-mrittiká, and inserted into an ulcer or an open swelling, brings about the purification of its interior, and these drugs and substances should be regarded as the ingredients of **Shodhana Vartis** (aseptic plugs).

Shodhana Kalka :—A kalka (aseptic paste), composed of the preceding drugs and substances, is possesed of the virtue of purifying the interior of an ulcer, or open swelling.

Oil or clarified butter prepared with the aforesaid Ajagandhá, Ajáshringi, etc, and Kásisa, Katurohini, Játikanda, and the two kinds of Haridrá, and applied to an ulcer or open swelling, purifies its interior. The medicated Ghritam prepared with the expressed juice of Arka roots, Uttamá, the milky juice of Snuhi plants, drugs abounding in alkalis, Játi-roots, the two kinds Haridrá, Kásisa, Katurohini and the aforesaid plug-drugs (Sodhana-Varti) pasted together, should be regarded as possessed of a virtue similar to the preceding one.

A medicated oil prepared with Mayuraka, (Apang), Rájabriksha, Nimva, Koshátaki, Tila, Vrihati, Kantakári, Haritála, Manahshilá, and the aforesaid plug-drugs (purgative drugs according to others), should be used for the purpose of purifying the interior of an ulcer. A pulverised compound consisting of Kásisa, Saindhava, Kinva, Vachá, the two kinds of Haridrá,

and the component drugs of the aseptic plug powdered together, should be used for the purification of the cavity of an ulcer. For the same purpose a condensed extract (Rasa-Kriyá)* should be made of the essence of the drugs belonging to the Sálsárádi, Patoládi, and Triphaládi groups.

Dhupanam :—A wise physician should fumigate (Dhupanam) an ulcer with the fumes of a compound consisting of Sriveshtaka, Sarjarasa, Sarala, Devadáru, and the drugs belonging to the Sálsáradi group, pulverised together and made into an (aseptic) fumigating compound.

A cold infusion (Shhita-Shritam) of trees (Vata, Audumvara, Ashvattha, etc.) which are cooling and astringent in their virtue, should be used in healing or setting up a process of granulation in an ulcer.

The Ropana-Varti :—Plugs of drugs such as Soma, Amrita (Gulancha), and Ashvagandhá, or of those belonging to the Kákolyádi group, or of the sprouts of milk-exuding trees (Kshirivrikshas such as, Vata, Audumvara, etc.) and inserted into an ulcer tend to help its granulation (Ropana). A paste (Kalka) of Samangá, Soma, Sarala wood, Soma-Valka, (red)

* The process consists in mixing the drugs with water weighing eight or sixteen times their combined weight, and then boiling them down to an eighth or sixteenth part of the entire quantity.

Chandana, and drugs belonging to the Kákolyádi group, is recommended for the healing of an ulcer.

A medicated Ghritam, prepared with the Prithak-parni, Átmaguptá, Haridrá, Daruharidrá, Málati, Sitá, and drugs belonging to the Kákolyádi group, is renowned for its healing properties. A medicated oil prepared with Kálánusári, Aguru, Haridrá, Daru-Haridrá, Devadáru, Priyangu, and Lodhra, is possesed of a similar efficacy.

A pulverised compound consisting of Kanguká, Triphalá, Lodhra, Kásisam, Shravaná and the barks of Dhava and Ashvakarna powdered together, is possessed of a similar healing property. The use of a pulverised compound consisting of Priyangu, Sarjarasa, Pushpa-kásisa, Tvaka, and Dhava powdered together is commended for the healing of an ulcer. A condensed extract (Rasakriyá) of the bark of milk-exuding trees (such as Vata, Ashvattha etc.) and the drugs known as the Triphalá, should be successively used for the healing of an ulcer.

Utsádanam:—The drugs known as Apámárga, Ashvagandhá, Tálapatri, Suvarchhalá and those belonging to the Kákolyádi group, should be used for the growth of flesh in an ulcer (Utsádana).

Avasádanam :—A compound consisting of Kásisa, Saindhava (rock salt), Kinvam, Kuruvinda,

Manalıshilá, the shell of a hen's egg, the blossoms of Játi flowers, the seeds of Shirisha, and Karanja, and powders of the abovesaid metals (Dhátus) mixed together, should be used in destroying the fleshy supergrowths of an ulcer (Avasádanam).

A wise physician should use all the drugs and substances as have been enumerated in connection with the healing or establishing of suppuration, etc. in an ulcer, or as many of them as would be available at the time.

Thus ends the thirty-sixth Chapter of the Sutrasthánam in the Sushruta Samhitá which treats of miscellaneous remedies for inflammatory swellings.

CHAPTER XXXVII.

Now we shall discourse on the Chapter, which deals with the distinctive traits of the different classes of soil commended for the growth or culture of medicinal herbs **(Bhumi-Pravibhaga-Vijnaniya-madhyayam).**

These are the general features of a ground which is recommended for the culture of medicinal plants or herbs. A plot of ground, whose surface is not broken or rendered uneven by the presence of holes, ditches, gravel and stones, nor is loose in its character, and which is not disfigured by ant-hills, nor used for the purposes of a cremation or execution ground, and which does not occupy the site of a holy temple, is favourable for the growth of medicinal herbs. A ground which possesses a soil which is glossy, firm, steady, black, yellowish or red and does not contain any sand, potash or any other alkaline substance, and is favourable to the germination of plants and easily pervious to the roots of plants growing thereon, and which is supplied with the necessary moisture from a close or adjacent stream or reservoir of water, is recommended for the growth of medicinal plants and herbs. Plants should be regarded as partaking of the virtues of the ground they grow upon. A plant, growing in such a commendable site, should be examined as to its being infested with worms

or insects, or as to its being anywise infected with poison, or cut with an arm, or affected by winds, atmospheric heat, or an animal's body. It should be culled or uprooted in the event of it being found sound, healthy, deep-rooted, full-bodied, and of matured sap. The gatherer should look towards the north at the time of culling.

A plot of ground with a pebbly, steady, heavy, dusky or dark coloured soil, and which conduces to the growth of large trees, and yields rich harvests of corn, should be regarded as permeated with the specific virtues of essential Earth-matter.

A ground having a cool, glossy, white coloured soil, which is adjacent to water, and whose surface is covered with a lavish growth of glossy weeds and luscious shady trees, should be considered as characterised by the essential properties of water (Amvuguna). A ground having a gravelly soil of varied colours, and which contributes only to the germination of scanty and yellowish sprouts, should be looked upon as permeated with the attributes of essential fire (Agniguna). A ground with an ash-coloured or ass-coloured (grey), soil, and on which withered looking, sapless, large-holed trees of stunted growth, somehow eke out a miserable existence, should be considered as being controlled by the specific properties of air (Anilaguná); while the one having a soft, level surface with large trees and lofty

hills cropping up at intervals thereon, and which is covered with growths of weeds and under-shrubs, and is endued with a dark soil, kept moist and sappy by the percolation of invisible (subterranean) water, should be looked upon as permeated with the essential properties of sky (Ákáshaguna).

According to certain authorities, the roots, leaves, bark, milky exudations, essence and fruits (seeds) of medicinal plants and herbs, should be respectively culled in the early part of the rains (Právrit) and in the rainy season proper (Varshá), autumn, (Sharat), fore-winter (Hemanta), spring (Vasanta) and summer (Grishma). But we cannot subscribe to that opinion inasmuch as the nature or essential temperament of the earth is both cool (Saumya) and hot (Ágneya). Accordingly drugs of cooling virtues should be culled during the cold seasons of the year, and the heat-making ones in the hot season, as they do not become divested of their native virtues at those seasons of the year. Medicinal plants of cooling virtues, which are grown on a soil of cool temperament and are culled during the cool seasons of the year, become intensely sweet, cooling and glossy. These remarks hold good of other medicinal plants and herbs.

Herbs of purgative properties, which are grown on a soil permeated with the specific virtues of water or earth matter, should be culled as the most effective of their kind. Similarly, herbs of emetic virtues should

be culled from a ground permeated with the essential virtues of fire, sky and air.

Herbs exercising both purgative and emetic virtues should be culled from ground exhibiting features common to both the two aforesaid classes of soil. Similarly, herbs possessed of soothing properties (Sanshamanam)* are found to exert a stronger action in the event of their being reared on a soil permeated with the essential properties of sky.

All medicinal herbs and substances should be used as fresh as possible, excepting Pippali, Vidanga, Madhu, Guda, and Ghritam, (which should be used in a matured condition *i.e.* not before a year). The milky juice or sap of a medicinal tree or plant should be regarded as strong and active under all circumstances. Herbs and drugs, that had been culled or collected within the year, might be taken and used in making up a medicinal recipe in a case where fresh ones would not be available.

Authoritative Verses on the Subject—Medicinal herbs and plants should be recognised and identified with the help of cowherds, hermits, huntsmen, forest-dwellers, and those who cull the fruits and edible roots of the forest. No definite time can be laid down for the culling of the leaves and roots of

* Herbs or drugs, which in virtue of their own essential properties soothe or subdue a disease without eliminating the morbid humours or without exercising any emetic or purgative action.

medicinal plants, etc., such as are used in compounding the recipe, which is called thė Patra-lavanam, and which covers, within its therapeutic range, diseases, which are peculiar to the entire organism (such as Váta-vyádhi, etc).*

As soil admits of being divided into six different classes according to its smell, colour, taste, etc. so the sap of a medicinal plant may assume any of the six different tastes through its contact with the peculiar properties of the soil it grows on. Tastes such as, sweet, etc., remain latent in water, which imparts them to the soil in a patent or perceptible condition.

A plot of ground, exhibiting traits peculiar to all the five fundamental material principles (such as the earth water, fire, etc.), is said to be possessed of a soil of general character (Sádhárani Bhumi), and medicinal plants and herbs partake of the specific virtues of the soil they grown on.

Drugs, whether fresh or old, and emitting a contrary smell, or in any way affected as regards their natural sap or juice, should not be used for pharmaceutical purposes.

The virtues of such medicinal drugs and substances such as Vidanga, Pippali, Madhu, and Guda, improve

* Hence the doctrine, as regards the culling of the different parts of a medicinal plant such as, the leaves, roots, etc., in the different seasons of the year, naturally falls to the ground.

(after a year). Accordingly all drugs and medicinal herbs, excepting the preceding ones, should be used fresh and unsoiled, or uninjured by insects.

Blood, nails, or hair etc., of animals, (officinally laid down to be used in our Pharmacopœia), should be taken from young and healthy animals, and the ordure, urine, or milk of an animal, (enjoined to be used for medicinal purposes), should be collected at a time after it has completed its digestion.

The pharmacy and the medicinal store of a physician should occupy a commendable site and an auspicious quarter of the sky (North or East), and the collected medicines should be kept tied in pieces of clean linen, or stored in earthen vessels and hollow tubes of wood, or suspended on wooden pegs.

Thus ends the thirty-seventh Chapter of the Sutrasthanam in the Sushruta Samhitá which treats of the Classification of grounds for the culture of medicinal plants and herbs, etc.

CHAPTER XXXVIII.

Now we shall discourse on the Chapter which deals with the general classification of drugs according to their therapeutical properties **(Dravya-Sangrahaniya-madhyáyam).**

These drugs are usually made into thirty-seven different groups (Gana) which are as follows :—

The Vidárigandhádi Group:—The drugs known as Vidárigandhá, Vidári, Sahadevá, Vishvadevá, Shvadanstrá, Prithakparni, Shatávari, Sáriva, black Sáriva, Jivaka, Rishavaka, Mahásahá, Kshudra-Sahá, Vrihati, Kantakári, Punarnavá, Eranda, Hansapádi, Vrishchikáli, and Rishavi, form the group known as the Vidári-gandhádi.

Metrical Text :—The present group of drugs subdues the action of the deranged Váyu and Pittam and proves beneficial in phthisis (Shosha), Gulma, aching of the limbs, Urdha-Shvása and cough.

The Áragvadhádi Group :—The drugs known as Áragvadha, Madana, Gopaghontá, Kutaja, Páthá, Kantaki, Pátalá, Murvá, Indrayava, Saptaparna, Nimva, Kuruntaka, Dási-kuruntaka, the two kinds of Karanja, Patola, Kirátttikua, Guduchi, Chitraka, Shángshtá, and Sushavi form the group known as the Áragvadhádi.

Metrical Text :—The group under discussion destroys the deranged Kapham and the effects of poison and proves beneficial in cases of Meha (morbid discharges from the urethra), Kushtha, fever, vomiting and itching of the body and acts as a purifying (aseptic) agent in the case of an ulcer.

The Varuna'di Group :—The drugs known as Varuna, Ártagala, Shigru, Madhu-Shigru, Tarkári, Mesha-Shringi, Putika, Naktamála, Morata, Agnimantha, the two kinds of Sairiyaka, Vimvi, Vasuka, Vasira, Chitraka, Shatávari, Vilva, Ajashringi, Darbhá, and the two kinds of Vrihati form the group known as the Varunádi.

Metrical Text :—The group is possessed of the efficacy of reducing the deranged Kapham and fat and proves efficacious in cases of cephalaegia, Gulma and internal abscesses.

The Viratarva'di Group :—The drugs known as Virataru, the two kinds of Sahachara, Darbha, Vrikshádani, Gundrá, Nala, Kusha, Kásha, Ashmabhedaka, Agnimantha, Moratá Vasuka, Vasira, Bhalluka, Kuruntaka, Indivara, Kapotavanká, and Shvadanstrá enter into the composition of the group known as the Viratarvádi.

Metrical Text :—The group subdues all disorders incidental to the deranged state of Váta and

proves curative in Ashmari, Sharkará, Mutra-krichhra, Mutrágháta and urinary troubles.

The Sálasárádi Group :—The group of medicinal drugs, known as the Sálasárádi, consists of Sálasára, Ajakarna, Khadira, Kadara, Kálaskandha, Kramuka, Bhurjja, Meshashringi, Tinisha, Chandana, Kuchandana, Shinshapá, Shirisha, Asana, Dhava, Arjuna, Tála, Sháka, Naktamála, Putiká Ashvakarna, Aguru and Káliyaka.

Metrical Texts :—The group of the drugs, known as the Sálasárádi Gana, destroys the germ of Kushtha, absorbs the deranged fat and Kapham and proves beneficial in morbid discharges from the urethra (Meha), chlorosis or jaundice (Pándu).

The Rodhrádi Group :—The group of medicinal drugs known as the Rodhrádi consists of Rodhra, Sávararodhra, Palásha Kutannata, Ashoka, Phanji, Katphala, Elabáluka, Sallaki, Jingini, Kadamva, Sálá and Kadali.

Metrical Texts :—The group is antidotal to the deranged Kapham and fat, is astringent in its properties, removes vaginal and uterine disorders, neutralises the effects of poison (anti toxic) and acts as a styptic and purifying agent in a case of ulcer and arrests all secretions and excretions of the body.

The Arkádi Group :—The drugs known as the Arka, Alarka, the two kinds of Karanja,

Nágadanti, Mayuraka, Bhárgi, Rásná, Indrapushpi, Kshudrashvetá Maháshvetã, Vrishchikáli, Alavaná and Tápasha-Vriksha, enter into the composition of the group known as the Arkádi Gana.

Metrical Texts:—The group known as the Arkádi destroys Kapham, fat, and the effects of poison. It acts as a vermifuge and a specific aseptic agent in the case of an ulcer and proves curative in diseases of the skin.

The Surasadi Group:—The drugs known as Surasá, white Surasá, Fainjjhaka, Arjaka, Bhustrina, Sugandhaka, Sumukha, Kálamála, Káshamarda, Kshavaka, Kharpushpá, Vidanga, Katphala, Surasi, Nirgundi, Kuláhala, Indurakarniká, Phanji, Práchivala, Kákamáchi and Vishamushtika form the group known as the Surasádi Gana.

Metrical Texts:—The group acts as a vermifuge and is an aseptic agent. It subdues the deranged Kapham and proves beneficial in catarrh, non-relish for food, asthma and cough.

The Mushkakadi Group:—The group of medicinal drugs known as the Mushkakádi consists of Mushkaka, Palásha, Dhava, Chitraka, Madana, Shinshapá, Vajra-Vriksha and Triphalá.

Metrical Text:—The present group is possessed of the therapeutic virtue of destroying fat and

removing the defects of semen. Meha, piles, jaundice, chlorosis, gravels and urinary calculi in the bladder are the diseases which yield to its curative efficacy.

The Pippalya'di Group :—The group of medicinal drugs known as the Pippalyádi consists of Pippali, Pippali mulam, Chavya, Chitraka, Shringavera, Maricha, Hasti-Pippali, Harenuka, Elá, Ajamodá, Indrayava, Páthá, Jiraka, Sarshapa, Mahá-Nimva-Phala, Hingu, Bhárgi, Madhurasá, Ativishá, Vachá, Vidanga and Katurohini.

Metrical Text :—The present group acts as a good appetiser and is an absorbant of intestinal mucous and unassimilated lymph chyle. The range of its therapeutical application includes catarrh, deranged Kapham and Vátam, non-relish for food, abdominal glands, colic and gastralgia.

The Ela'di Group :—The group of medicinal drugs known as the Eládi-Gana consists of Elá, Tagara, Kushtha, Mánsi, Dhyámaka, Tvaka, Patra, Nágapushpa, Priyangu, Harenuka, Vyághranakha, Shukti, Chandá, Sthauneyaka, Shriveshtaka, Chocha, Choraka, Válaka, Guggulu, Sarjarasa, Turushka, Kunduruka, Aguru, Sprikka, Ushira, Bhadradáru, Kumkuma, Punnága and Keshara.

Metrical Text :—The therapeutic virtue of the group consists in subduing the action of Váyu and

Kapham and in neutralising the effects of poison. It is a cosmetic and arrests the eruption of pimples and other vegetations on the skin such as rash, urticaria etc. and checks the itching sensation incidental thereto.

The Vacha'di and Haridra'di Groups:—The groups known as the Vachádi and Haridrádi Ganas, respectively consist of Vachá, Mustá, Ativishá, Abhayá, Bhadradáru, Nágakeshara (Vachádi), Haridrá, Dáruharidrá, Kalashi, Kutaja seeds and Madhuka (Haridradi).

Metrical Text:—These two groups are the purifiers of breast milk and specifically act as the assimilators of the deranged humours of the body, their curative properties being markedly witnessed in cases of mucous dysentery (Ámátisára).

The Shya'ma'di Group:—The drugs known as Shyámá, Mahá-Shyámá, Trivrit, Danti, Shankhini, Tilvaka, Kampillaka, Ramyaka, Kramuka, Putrashroni, Gavákshi, Rájavriksha, the two kinds of Karanja, Guduchi, Saptalá, Chhagalántri, Sudhá and Suvarnakhiri, form the group known as the Shyámádi Gana.

Metrical Text:—This group is possessed of the therapeutic virtue of curing abdominal glands and acts as an anti-toxic. It proves beneficial in Anáha

(epistasis), abdominal dropsy and diarrhœa and is one of the most reliable purgatives in cases of obstinate constipation of the bowels with suppression of urine and distention of the abdomen (Udávarta).

The Vrihatya'di Group :—The drugs known as Vrihati, Kantakáriká, Kutajaphala, Páthá and Madhuka combinedly form the group known as the Vrihatyádi Gana.

Metrical Text :—The group is a good digestant or assimilator of the deranged humours. It subdues the deranged Vátá, Pitta and Kapham and proves efficacious in cases of nausea, water-brash, dysuria and non-relish for food.

The Patola'di Group :—The drugs known as Patola, Chandana, Kuchandana, Murvá, Guduchi, Páthá, and Katurohini form the group known as the Patoládi Gana.

Metrical Text :—The group is a febrifuge and anti-toxic, and its therapeutic action consists in destroying the action of the deranged Pittam and Kapham. It restores the natural relish of the patient for food, removes vomiting, and proves beneficial in ulcers, and itching erythematous eruptions.

The Ka'kolya'di Group :—The drugs known as Kákoli-Kshira-Kákoli, Jivaka, Rishabhaka, Mudgaparni, Máshaparni, Medá, Mahámedá, Chhinna-ruhá,

Karkata-Shringi, Tugákshiri, Padmaka, Prapaundarika, Riddhi, Vriddhi, Mridviká, Jivanti and Madhuka, combinedly form the group known as the Kákolyádi Gana.

Metrical Text :—The group of medicinal drugs under discussion subdues the action of the deranged Pittam, blood and Váyu. It increases the quantity of milk in the breast (galactagogue) and favours the accumulation of phlegm (Kapham) in the body. It is a restorative and an elixir and is endued with the therapeutic virtue of augmenting the virile potency of a man.

The Ushaka'di Group :—The medicinal drugs and substances known as Ushaka (alkaline earth) Saindhava salt, Shilájatu, the two kinds of Kásisa, Hingu and Tutthaka enter into the composition of the group known as the Ushakádi Gana.

Metrical Text :—It destroys kapham (mucous), absorbs the fat of the body and proves curative in cases of stone or gravel in the bladder (urinary calculi), dysuria and abdominal glands (Gulma).

The Sa'riva'di Group :—The drugs known as Sárivá, Madhuka, Chandana, Kuchandana, Padmaka, Káshmari phala, Madhuka-pushpa and Ushira, combinedly form the group known as the Sárivádi Gana.

Metrical Text :—The group under discussion allays thirst and proves curative in a case of hæmoptysis,

Its therapeutic virtue consists in curbing an attack of bilious (Pittaja) fever and in specifically alleviating the burning sensation (Dáha) of the body.

The Anjanádi Group :—The group known as the Anjanádi Gana consists of Anjana, Rasánjana, Nágapushpa, Priyangu, Nilotpala, Nalada, Nalina, Keshara and Madhuka.

Metrical Texts :—An attack of hæmoptysis readily yields to the curative virtue of the group under discussion. It is anti-toxic in its character and allays the internal burning sensation of the body.

The Parushakádi Group :—The group known as the Parushakádi Gana consists of Parushaka, Drákshá, Kat-phala, Dádima, Rájádana, Kataka-phala Sháka-phala and Triphalá.

Metrical Text :—It subdues the deranged Váyu, allays thirst, acts as a cordial, increases one's relish for food and cures the diseased or abnormal components of urine or its defects.

The Priyangvádi Group :—The group of medicinal drugs known as the Priyangvádi Gana consists of Priyangu, Samangá, Dhátaki, Nága-pushpa, Chandana, Kuchandana, Mocharasa, Rasánjana, Kumbhika, Srotohnjana, Padma-keshara, Jojanvalli, and Dirghamulá.

The Amvashthádi Group :—Drugs known as Amvashthá, Dhátaki flowers, Samangá, Katvanga,

Madhuka, Vilva-peshiká, Rodhra, Sávara-Rodhra, Palásha, Nandi-Vriksha and Padma keshara, enter into the composition of the group known as the Amvashthádi Gana.

Metrical Text :—The two medicinal recipes or groups prove beneficial in a case of deranged Pitta, favour the healing of ulcers, bring about the adhesion of fractured bones and prove curative in cases of dysentery where the stools are found to consist of lumps of thick and matured mucous (Pakvátisára.)

The Nyágrodhádi Group :—The drugs known as Nyágrodha, Audumvara, Ashvattha, Plaksha, Madhuka, Kapitana, Kakubha, Ámrá, Koshámra, Chorakapatra, the two sorts of Jamvu, Piyála, Madhuka (Maula), Rohini, Vanjula, Kadamva, Vadari, Tinduki, Sallaki, Rodhra, Sávara-Rodhra, Bhallátaka, Palásha, and Nandi-Vriksha, combinedly form the group known as the Nyágodhrádi Gana.

Metrical Texts :—This group proves beneficial in cases of ulcer, cures all disorders of the uterus and vagina, favours the adhesion of fractured bones and all sorts of secretions of the body in addition to its astringent properties (Sangráhi) and proves curative in a case of hæmoptysis. It is an anti-fat and assuages the burning sensation of the body.

The Guduchyádi Group :—The drugs known as Guduchi, Nimva; Kustumvuru, Chandana, and Padmaka, combinedly form the group known as the Guduchyádi Gana.

Metrical Text :—It is a good appetiser, and acts as a general febrifuge and successfully combats such symptoms as nausea, want of relish for food, vomiting, thirst and burning sensation of the body.

The Utpaládi Group :—The drugs known as Utpala, Raktotpala, Kumuda Saugondhika, Kuvalaya, Pundarika and Madhuka constitute the group known as the Utpaládi Gana.

Metrical Texts :—This group is possessed of the therapeutic virtue of allaying thirst and corrects the deranged Pittam and the vitiated blood. It assuages the burning sensation of the body and proves curative in cases of vomiting, in Hridroga (Angina pectoris), in syncope, in hæmoptysis and in cases of poisoning as well.

The Mustádi Group :—The group of drugs known as Mushtádi Gana is composed of Mustá, Haridrá, Dáru-Haridrá, Haritaki, Ámlaki, Vibhitaka, Kushtha, Haimavati, Vachá, Páthá, Katu-rohini, Shárngashta, Ativishá, Dravidi, Bhallátaka and Chitraka.

Metrical Text :—The group under discussion destroys the deranged Shleshmá, cures uterine and vaginal disorders, purifies the breast milk of a mother, and acts as a good digestant (Páchana).

The Triphalá Group :—The drugs known Haritaki, Ámlaki and Vibhitaka, constitute the group known as the Triphalâdi Gana.

Metrical Text :—The present group destroys the action of the deranged Váyu, Kapham and Pittam and proves curative in Meha, and in diseases of the skin (Kushtham). It is a good appetiser, improves the eyesight and proves beneficial in chronic intermittent fever (Vishama-jvara).

The Trikatu Group :—The Trikatu group consists of Pippali, Maricha and Shringavera.

Metrical Text :—It destroys fat and Kapham, proves curative in cutaneous affections, leprosy (Kushtha), and morbid discharges from the urethra, and is possessed of the virtue of curing abdominal glands, catarrh, dullness of the appetite and indigestion.

The Ámlakyádi Group :—The group known as the Ámlakyádi Gana consists of Ámlaki, Haritaki, Pippali and Chitraka.

Metrical Text :—The present group of medicinal drugs acts as a general febrifuge and may be used

with advantage in fevers of whatsoever type. Moreover, it is an aphrodisiac and acts as a general tonic or restorative and appetiser, destroying the deranged Kapham and improving the eyesight.

The Trapvadi Group :—The group known as the Trapvádi Gana consists of Trapu, Sisa, Támra, Rajata, Krishna-Lauha, Suvarna and Lohamala.

Metrical Text :—The present group is regarded as a good vermifuge and possessed of the virtue of neutralising the effects of chemical poison originated through incompatible combinations. Its therapeutic range covers jaundice, chlorosis, Meha (morbid secretions from the urethra), Hridroga (heart disease), thirst and maladies incidental to the effects of poison.

The Lakshadi Group :—The drugs known as the Lákshá, Árevata, Kutaja, Ashvamára, Katphalam, Haridrá, Dáru-Haridrá, Nimva, Saptachchhada, Málati, and Tráyamáná form the Lákshádi Gana.

Metrical Text :—This consists of astringent, bitter and sweet taste (Rasa) and acts as a good vermifuge and a purifying (aseptic) agent in cases of bad, malignant or indolent ulcers. Diseases due to the deranged Kapham and Pittam prove amenable to its curative properties, which extend to cases of cutaneous affections (Kushtham) as well. Now we shall describe

the five groups of medicinal roots (Mulam), each consisting of similar number of components.

The Svalpa Panchamulam Group :—The group known as the minor group of five roots (Svalpa-Pancha-Mula) consists of the roots of medicinal plants known as the Trikantaka, the two species of Vrihati, Prithakparni, and Vidárigandha.

Metrical Texts :—The compound possesses a taste blended of astringent, bitter and sweet. It is a tonic and aphrodisiac, subdues the deranged Váyu and proves soothing to the deranged Pittam.

The Mahat Panchamula Group :—The one known as the great or the major group of five medicinal roots (Mahat-Pancha-Mula) consists of the roots of such trees as Vilva, Agnimantha, Tuntuka, Pátála and Káshmari.

Metrical Texts :—It is bitter in taste and subdues the deranged Kapham and Vátam. It is light (easily digestible) and appetising, and acquires a subsequent sweet taste in its reaction (Anurasa).

The Dashamula Group :—The two preceding groups in combination form the one technically known as the **Dasha-Mulam** (the ten roots), which is possessed of the virtue of destroying the deranged Váta, Pittam and Kapham. It proves beneficial in cases of asthma and difficult respiration. It acts as a good

digestant in respect of undigested lymph chyle, etc and is used with satisfactory results in all types of fever.

The Valli-Panchamulam Group :—The group consisting of the roots of the five medicinal creepers known as Vidári, Sarivá, Rajani, Guduchi and Aja-Shringi, is called the Valli-Panchamulam.

The Pancha-kantakam Group :—Similarly, the group consisting of the five medicinal (thorny) shrubs known as Karamradda, Trikantaka, Sairiyaka, Shatávari, and Gridhranakhi, is called the Pancha-Kantaka.

Metrical Texts :—The two preceding groups prove curative in Hæmoptysis and in all the three types of anasarca or œdema (Shopha). Moreover, it has the incontestable virtue of arresting all sorts of urethral discharges and is a potent remedy in all cases of seminal disorders.

The Pancha-Trina Group :—The group consisting of the five medicinal herbs (of the grass species) and known as Kusha, Kásha, Nala, Darbha, Kándekshuka, is called the Pancha-Trina.

Metrical Texts :—Cases of Hæmoptysis, renal defects or of uninary diseases are found to speedily yield to the curative efficacy of the compound internally administered through the medium of cow's milk.

Metrical Texts :—The first two of the afore-

said groups of Panchamulas (viz., the Svalpa and the Vrihat Panchamulas) are possessed of the virtue of destroying the deranged Váta, while the one standing in the bottom of the list (Trina-Panchamula) is endued with the property of killing the deranged Pittam. Those standing third and fourth in order of enumeration (the Valli and Kantaka Panchamulas) subdue the deranged Kapham.

The groups of medicinal drugs and roots have thus been briefly described, which will be more elaborately dealt with later on in the chapter on Therapeutics.

An intelligent physician should prepare plasters, decoctions, medicated oils, Ghritas (medicated clarified butter) or potions, according to the exigencies of each individual case.* The groups enumerated above should be therapeutically used according to the nature of the deranged humours involved in each individual case. Only two, three or four drugs of the same medicinal group, or a similar number of drugs chosen from the the different groups, or a group of medicinal drugs in its entirety, or in combination with another, should be used according to the indications of any particular case, as the physician, in his discretion, would determine.

* **Additional Text** :—These drugs may be duly culled in all seasons of the year, and should be stored in a room protected from smoke, blasts of cold, wind and rain.

Thus ends the thirty-eighth Chapter of the Sutrasthánam in the Sushruta Samhitá, which deals with the classification of drugs according to their therapeutical use.

CHAPTER XXXIX.

Now we shall discourse on the Chapter which treats of medicinal drugs possessed of cleansing (cathartic) or soothing effects **(Samshodhana-Samshamaniya-madhyáyam).**

Emetic Drugs :—The drugs known as Madana fruits, Kutaja, Jimutaka, Ikshváku, Dhámágarba, Krita-vedhana, Sarshapa, Vidanga, Pippali, Karanjaka, Prapunnáda, Kovidára, Korvudára, Arishta, Ashvagandhá, Vidula, Vandhujivaka, Shvetá, Shanapushpi, Vimvi, Vachá, Mrigerváru and Chitrá, etc. are possessed of emetic properties. Out of these the **fruits** (seeds) of plants preceding Kovidára in the abovesaid list (from the Madana fruits to those of the Prapunnáda) and the **roots** of plants from Kovidára to its close, should be used.

Purgative Drugs :—The trees, plants, herbs and creepers, etc. known as Trivritá, Shyámá, Danti, Dravanti, Saptalá, Shankhini, Vishániká, Gavákshi, Chhagalántri, Snuk, Suvarnakshiri, Chitraka, Kinihi, Kusha, Kásha, Tilvaka, Kampillaka, Ramyaka, Pátalá, Puga, Haritaki, Ámalaka, Bibhitaka, Nilini, Chaturangula, Eranda, Putika, Mahávriksha, Saptachchhada, Arka, and Jyotishmati, etc. are possessed of purgative properties. Of these the **roots** of plants, which precede

Tilvaka in the above list, should be used for purgative purposes. The **barks** of trees from Tilvaka to Pátalá in the same list should be used for similar purposes. The pollens or dust of the Kampilla seeds, and of the **fruits** of trees from Eranda to Puga, the **leaves** of Putika and Áragvadha, and the milky exudations of the remaining members of the list, should be similarly used.

The expressed juice of Koshátaki, Saptalá, Shankhini, Devadáli, or Káravelliká is both emetic and purgative.

The Errhines :—The following drugs, *viz.* Pippali, Vidanga, Apámárga, Shigru, Siddhárthaka, Shirisha, Maricha, Karavira, Vimvi, Girikarniká, Kinihi, Vachá, Jyotishmati, Karanja, Arka, Alarka, Lashuna, Ativishá, Shringavera, Tálisha, Tamála, Surasá, Arjaka, Ingudi, Meshashringi, Mátulungi, Murangi, Pilu, Játi, Shála, Tála, Madhuka (Maula), Lákshá and Hingu, together with such substances as rock-salt, spirits, cow's urine and watery exudation of cow dung should be regarded as errhines (Shirovirechanam). The **fruits** (seeds) of plants from Pippali to Maricha enumerated in the above-said list, the **roots** of plants commencing with Karavira and ending with Arka, the **bulbs** of those whose names precede Tálisha in the same list, the **leaves** of those commencing with Tálisha and ending with the Arjaka therein, the **barks** of Ingudi and Meshashringi, the **flowers** of Mátulungi, Murungi, Pilu and Játi, the **essence** (Sára) of Shála, Tála

and Maduhka (Maul) trees, the gummy exudation (Niryása) of Hingu plants and Lákshá trees, as well as salts which are but the saline modifications of earth, Madya (wines) which are but the modified products of Ásava (fermented liquors), and secretions of cowdung, or cow's urine which should be understood to mean the animal excrements, in their crude or natural state, should be used where errhines are indicated.

Samshamaniya Drugs :—Now we shall enumerate the names of drugs and substances which soothe or pacify the deranged humours or principles of the body involved in any particular disease (Sanshamanam).

Vata-Samshamana-Varga:—The following drugs, *viz.* Bhadradáru, Kustha, Haridrá, Varuna, Meshshringi, Valá, Ativalá, Ártagala, Kachhurá, Sallaki, Kuverákshi, Virataru, Sahachara, Agnimantha, Vatsádani, Eranda, Ashmabhedaka, Alarka, Arka, Shatávari, Punarnavá, Vasuka, Vasira. Kánchanaka, Bhárgi, Kárpasi, Vrishchiáali, Pattura, Vadara, Yava, Kola, Kulattha, etc. and the drugs forming the group of Vidárigandhádi-Gana, as well as those belonging to the first two groups of Panchamula (Mahat and Svalpa), are possessed of the general virtue of soothing (restoring to its normal state) the deranged (Váyu) Váta.

Pitta-Samshamana-Varga :—The drugs known as Chandana, Kuchandana, Hrivera, Ushira,

Manjishthá, Payasyá, Vidári, Shatávari, Gundrá, Shaivala, Kahlára, Kumuda, Utpala, Kadali, Kandali, Duryá, Murvá, etc. and the drugs forming the groups of Kákolyádi, Sárivádi, Anjanádi, Utpaládi, Nyágrodhádi, and Trina-Panchamula groups generally prove soothing to the deranged Pittam.

Shleshma - Samshamana - Varga :— The drugs known as Káleyaka, Aguru, Tilaparni, Kushtha, Haridrá, Shitashiva, Shatapushpá, Saralá, Rásná, Prakiryyá, Udakiryyá, Ingudi, Sumanáh, Kákádani, Lángalaki, Hastikarna, Munjátaka, Lámajjaka, etc. and the drugs belonging to the groups of Valli and Kantak Panchamulas and those composing the Pippalyádi-Varga, Brihatyádi-Varga, Mushkádi-Varga, Vachádi, Surasádi and Áragvadhádi groups are generally possessed of the efficacy of restoring the deranged Shleshmá to its natural state.

The choice of a medicine whether for cleansing or soothing purposes should be determined by the consideration of the strength (intensity) of the disease, and the stamina and the digestive function of the patient under treatment. A medicine (of a soothing or Samshamanam efficacy), which is stronger than the disease it has been applied to combat with, not only checks it with its own soothing virtue but usually gives rise to a fresh malady, on account of its surplus energy being not requisitioned into

action, nor its being used up by the weakened and conquered original distemper. It is thus stored up in the organism for the working of fresh mischief. A medicine, which proves stronger than the digestive function of a patient, impairs his digestion, or takes an unusually greater length of time to be digested and assimilated into his organism. A medicine, which is stronger than the physical stamina of a patient, may bring on a feeling of physical languor, fits of fainting, loss of consciousness, delirium, etc. Similarly, an over-dose of a cleansing (cathartic) medicine may work similar mischief. On the other hand, medicines of inadequate potencies, and accordingly unequal to the strength of a disease, as well as medicines in inadequate doses fail to produce any tangible effect. Hence medicines of adequate potencies should be alone administered in adequate doses.

Authoritative verses on the subject :—A prudent physician should prescribe a mild purgative for a patient enfeebled by the action of the deranged and accumulated bodily humours and laid up with a disease in which such a cleansing (cathartic) or emetic remedy is indicated. The same rule should hold good in the case of a patient enfeebled through causes other than physical distempers, and whose bowels are easily moved, and in whom the fecal matter, etc. are found to have been dislodged

from their natural seats or locations. Decoctions (including extracts and cold infusions of medicinal herbs) in doses of four Palas weights, and pastes and powders in doses of two Palas weights, should be prescribed in a disease of ordinary intensity. Corrective medicines (Purgatives and Emetics) may be safely exhibited even in a weak patient with loose or unconstipated bowels, if they are found to be stuffed with a spontaneous accumulation of fecal matter (Dosha) etc. inspite of such looseness or easy motion.

Thus ends the thirty-ninth Chapter of the Sutrasthánam in the Sushruta Samhitá, which treats of drugs of cleansing (corrective) and soothing properties.

CHAPTER XL.

Now we shall discourse on the Chapter, which treats of drugs and their flavours, virtues, potencies and chemical actions. (**Dravya-Rasa-Guna-Virya-Vipaka-Vijnaniya-madhyayam**).

Certain professors of the Áyurveda hold that a medicinal drug or substance is pre-eminently the most important matter with which the science of medicine is concerned. First because, a drug, as a substance, has a definite and continuous existence, which its attributes (such as, taste, etc.,) do not possess. As for example the tastes, etc., which characterise a fruit in its unripe stage, are not perceived in its ripe or matured condition. Secondly because, a drug is real (Nitya) and invariable, whereas its attributes are but transitory and accidental at the best. As for instance the real character of a drug cannot be destroyed whether it be powdered or pasted. Thirdly because, a drug or a substance never can lose its own generic character. As for example, a drug possessed of attributes peculiar to the fundamental matter, earth, can never be transformed into one of watery attributes—a truth which does not hold good of its attributes. Fourthly because, a drug or a substance is an object of all the five senses of a man, whereas its attributes of tastes, etc.

are respectively accommodated to the faculty of special sense organs. Fifthly because, a drug or a substance is the receptacle of the attributes of taste, etc., while the latter are the things contained. Sixthly because, a dictum of medicine can be commenced with the name of a drug or substance. As for example, it is quite natural to say that the drugs such as Vidári Gandhá, etc., should be pressed and boiled. But it sounds preposterous to utter that the sweet taste should be pulverised and boiled. Seventhly because, the greater importance of a drug or substance has been laid down in the Shastras of medicines inasmuch as medical recipes have been described by the names of their component ingredients such as Mátulunga, Agnimantha, etc., and not described as the tastes of Mátulunga, Agnimantha etc. Eighthly because, the attributes of tastes, etc., depend upon the drugs and substances (of which they are the attributes) for their progressive maturity. As for example, the taste of a drug or substance varies with its growth and is different in its raw (immature) and ripe (mature) conditions. (Hence a drug is more important than its attributes of taste, etc.) Ninthly because, a drug may prove curative through the efficacy of one of its component parts or principles as in the case of Mahávriksha, the milky exudations of which are possessed of therapeutical virtues, which cannot be said of its taste.

Hence a drug or a substance (Dravyam) is the most

important factor (which the science of medicine has got to deal with). A substance or drug necessarily implies action and attributes with which it is intimately connected and of which it is the primary cause, or to put it more explicitly, these attributes have an inseparable inherence in and are intimately associated with the substance by way of cause and effect (Samaváyi-Káranam).

Others, on the contrary, who do not endorse the above opinion, accord the highest importance to the attribute of taste (Rasa) of a drug or substance. Firstly because, it is so laid down in the Ágamas (Vedas), which include the science of medicine (Áyurveda Shástram) as well, and inasmuch as such statements as "Food is primarily contingent on its tastes and on food depends life" occur therein. Secondly because, the essential importance of taste may be inferred from such injunctions or instructions of the professors of medicine as, "sweet, acid and saline tastes soothe or pacify the deranged bodily Váyu." Thirdly because, a drug or a substance is named after the nature of its taste, as a sweet drug, a saline subtance, etc. Fourthly because, its primary importance is based on the inspired utterances of the holy sages (Rishis) which form the sacred hymns and verses of the Vedas, and such passages as "sweets to be collected for the purposes of a religious sacrifice," etc., are to be

found in them. Hence taste is the most important factor in the science of medicine and forms the primary attribute of a medicinal drug. But, later on, we shall have occasion to speak of that.

Certain authorities however, (who reject the two aforesaid theories), hold the potency (Viryam) of a drug to be the most important factor in medicine inasmuch as its therapeutic action, whether purgative, emetic, or both, or cathartic, or pacifying, or astringent, appetising, pressing (drawing to a definite head) or liquefacient, or constructive, tonic (vitalising) or aphrodisiac, or inflammatory, absorbing, caustic, or bursting, or intoxicating, soporific, killing or antitoxic, depends upon its potency. The potency of a drug is either cooling or heat-making owing to the two-fold (hot and cool) nature of the temperament of the world. According to several authorities the potency of a medicinal drug may be classed as either hot or cool, emollient or dry, expansive or slimy, mild or keen, so as to embrace the eight different attributes in all. These potencies of medicinal drugs serve their respective functions by overpowering their (drugs') tastes with their specific strength (intensity) and virtues. As for example the decoction of the roots belonging to the group of the Mahá-Panchamulam, though possessed of an astringent taste which is subsequently transformed into a bitter

one, acquires the virtue of pacifying the deranged Váyu out of its heat-making potency. Similarly, the pulse known as Kulattha though possessed of an astringent taste, and onion though endued with a pungent one, respectively soothe the same deranged humour of the body through the oleaginous character of their potencies. On the other hand, the expressed juice of sugar-cane, though possessed of a sweet taste, tends to augment or aggravate the deranged Váyu owing to its cooling potency. The drug Pippali, though a pungent substance in itself, proves soothing to the deranged Pittam, owing to its mild and cooling potency. Similarly, an Ámalakam fruit, though acid in taste, and Saindhava, though saline, respectively tend to pacify the deranged Pittam. The drug Kákamáchi, though of a bitter taste, and fish, though sweet, respectively aggravate the Pittam, owing to their thermogenetic potency. Similarly, Mulakam (Radish), though pungent, increases the Kapham of the body, on account of its emollient potency; and Kapittham, though acid, soothes; and honey, though sweet, tends to pacify the deranged Kapham owing to the dry character of its potency. The aforesaid instances have been cited by way of illustration.

Authoritative verses on the subject :—Tastes, which are possessed of dry, light or

expansive potencies, fail to pacify the deranged Váyu, though otherwise they may prove soothing to that deranged humour. Similarly, tastes, which are ordinarily reckoned as pacifiers of the deranged Pittam, fail to produce that effect in the event of their being endued with a keen, light or heat-making potency. Likewise, tastes, which are commonly found to soothe the deranged Kapham, tend to aggravate it in the event of their being possessed of potencies which are respectively heavy, cool and emollient in their character.* Hence the potency of a drug is the most important factor in the science of medicine.

But certain authorities dissent from the above-said view, and attach the highest importance to the process of digestive (chemical) reaction (Vipáka) for the reason, that all ingested food, properly or improperly digested in the stomach, proves wholesome or otherwise to the body. Certain authorities on the subject hold that digestion develops all the several tastes.†

According to others, tastes such as, sweet, pungent and acid, follow upon the completion of the process of digestion (by way of reactionary result or transformation).

* Flavours such as, sweet, acid and saline, subdue the deranged Váyu. Tastes such as, sweet, bitter and astringent are antibilious in their efficacy, while those, which are pungent, bitter and astringent, are antiphlegmagogic in their virtues.

† The process of digestion is followed by a reactionary taste, which may be either sweet, pungent, acid, astringent, bitter or saline.

It is needless to say that the hypothesis is based on erroneous data, inasmuch as the fact of acid digestion (acid taste developed at the close of the digestive process or reactionary acidity) is contrary both to the properties of matter and the collective experience of the race embodied in the dictum of the Shastras, and which should be rather ascribed to the acid taste of the Pittam remaining in an undigested or unassimilated condition owing to imperfect gastric digestion. The probability of a saline digestion (a reactionary saline taste following upon the close of the digestive process) should be necessarily presumed, if the fact of an acid digestion were to be upheld as a tested and corroborated principle of medical science. The hypothesis of an acid digestion (reactionary acidity) does not preclude the possibility of a similar saline one owing to the participation of the natural taste (saline) of the bodily Kapham in the process of digestion, as is said of Pittam in the preceding instance. Hence the theory that only three tastes, such as sweet, acid, and pungent are developed through digestive reaction, appears to be untenable, and naturally points to the doctrine that a sweet taste (partaken of by a man) brings on a sweet tasted digestion; an acid taste (reactionary acidity) begets acid digestion, and so on, a taste of whatsoever kind partaken of by a man imparting its specific character to his digestive reaction.

Those, who adhere to the last named doctrine, endeavour to substantiate it by the following analogy, and argue that as milk kept boiling in a basin placed over a fire does not change its natural sweetness (with the change of its temperature), as cereals such as Shálirice, wheat, barley, Mudga, etc. sown broadcast in the ground do not part with their inherent, generic attributes (through their successive stages of development), so the tastes of food-stuff do not alter even after being boiled in the heat of the digestive organs.

Others, on the contrary, assert that weak tastes are naturally merged in the strong ones in the course of digestion. And since the consensus of expert opinions on the subject serves only to increase the confusion on account of their differences and bigoted antipathy, we shall judiciously refrain from indulging in idle theories on the subject.

Only two kinds of digestion (digestive reactionary tastes) have been noticed in the Shástras, such as, the sweet and the pungent, the first being heavy and the second light. The specific properties of the five essential material principles of the world such as, the earth, water, fire, air and sky may be roughly described as heaviness and lightness, the two attributes which appertain to their fundamental natures. Heaviness forms the characteristic attribute of earth

and water, while lightness stands for the essential properties of fire, air and sky. Hence the digestion of all food-stuff may be described as either heavy (Guru) or light (Laghu).

Authoritative verses on the subject :—Of substances under the process of digestion, those, which are characterised by attributes, specifically belonging to earth and water, are called substances of sweet (heavy) digestion ; while those which are permeated with the specific properties of air, fire and sky are called substances of pungent (light) digestion (easily digestible articles of food). We have fully stated the text of the controversy as regards the primary importance of drugs and their tastes, virtues, potencies and digestive reactions, as well as the views of those who build their theories on the separate or exclusive importance of any of the five afore-said factors. The wise and the erudite set an equal importance to each of them, and ascribe the curative efficacy of a medicine to the co-operation of all these five factors. A drug or a substance sometimes destroys or originates a deranged condition of the humours through the dynamical action of its native or inherent properties, sometimes in virtue of its specific potency and sometimes by natural taste or digestive (chemical) reaction. Digestive reaction is impossible without drug potency. There is

no potency without a taste, and taste without a drug or substance is an absurdity. Hence a substance (vegetable or otherwise) is the greatest of them all. A taste and a substance are correlative categories from the time of their origin, like a body and an embodied self in the plane of organic existence. Since an attribute *per se* can not be possessed of another attribute, the eight kinds of potency (properties) can only appertain to a substance and not to a taste, which is an attribute in itself. Substances are digested in an organic body and not the six tastes simply for the reason of their being invisible and intangible in themselves. Hence a substance is the greatest of all the aforesaid five factors (of substance, taste, virtues, etc.) and the attributes lie inherent in the substance.

Unscrutable and unthinkable are the virtues of drugs (medicines), which are above all rules of syllogism; and hence drugs (medicines), which have been observed to be efficacious from time immemorial, as well as those laid down in the scriptures on medicines, should alone be used in the course of a medical treatment. A learned physician should think it a sacrilege to logically dispute the efficacy of a medicine of tested virtue, and which has been adopted after generations of careful observation and is instinctively pronounced by men as a beneficial remedy.

No amount of logic will alter the nature of things, nor persuade the drugs of the Amboshtha group to exercise a purgative virtue. Hence an intelligent physician should adhere to the officinal recipes given in the books on medicine, and not introduce innovations, however logical or probable, into the realms of applied or practical Therapeutics.

Thus ends the fortieth Chapter of the Sutrasthánam in the Sushruta Samhitá, which deals with drugs and their flavours, virtues, and digestive (chemical) transformation.

CHAPTER XLI.

Now we shall discourse on the Chapter, which treats of the specific properties of drugs (**Dravya-Vishesha-Vijnániya-madhyáyam**).

The five fundamental principles* such as the earth (Kshithi), water (Ápa), fire (Teja), air (Marut) and Sky (Vyoma) enter into the composition of all substances in the world, and the predominance of any of them in a particular substance determines its character. Accordingly a thing is denominated as a substance of dominant earth principle, or one marked by a predominance of fire, air or ether.

Párthiva Drugs :—A thing or substance, which is thick, pithy, compact, dull, immobile, rough, heavy (hard to digest), strong smelling and largely has a sweet taste marked by a shade of astringent, is called a substance of dominant **earth** (Párthivam) **matter**. Such a thing increases the firmness, strength, hardness and rotundity of the human body, and is possessed of gravity (the virtue of moving the bowels).

Ápyam Drugs :—Similarly, a thing or substance, which is cold, moist, glossy, devoid of keenness, takes time to be digested, is mobile, compact, soft,

* These may be translated as **Solid, Liquid, Gas, Ether**, and **Etherion** in the parlance of modern science.

slimy, sappy, and is largely endued with an acid, saline or sweet taste marked by a shade of astringent, is called a substance of dominant **water** (**Ápyam**) principle. Such a thing soothes and imparts a glossy character to the body, keeps it moist, favours the adhesion of its parts, and increases its liquid contents.

Taijasam Drugs:—A thing or substance, which is heat-making, pungent and keen, subtle in its essence, permeates the minutest capillaries, and is dry, rough, light, and non-slimy in its character and has strong properties and a taste which is largely pungent marked by a shade of saline, is called a substance of the dominant principle of **fire** (Taijasam). Such a thing naturally evinces an up-coursing tendency in the body, produces a burning sensation in its inside, helps the process of digestion and spontaneous bursting (of abscesses), increases the temperature of the body, strengthens the eyesight, improves the complexion and imparts a healthful glow to it.

Váyaviyam Drugs:—A thing or substance, which is subtle in its essence, and is dry, rough, light, cold and non-slimy, increases tactual sensation and is endued with a largely astringent taste marked by a shade of bitter, is called a substance of the dominant principle of **air** (Váyaviyam). Such a thing removes the slimy character of the internal organism, produces light-

ness, dryness and emaciation of the body, and increases the speculative or contemplative faculty of the mind.

Ákáshiyam Drugs :—A thing or substance, which is smooth, unctuous, and is subtle in its nature, soft or pliant in its consistency, expansive (in the internal organism), porous, soundy and non-slimy in its character without any definite taste, is called a substance of the dominant principle of **sky** (Ákáshiyam). Such a substance produces softness, lightness and porosity of the body.

It may be inferred from the foregoing illustrations that there is not a single substance in the world but is endued with certain curative virtues. Drugs or substances, used in specific combinations and according to the indications of a disease under treatment, prove curative in virtue of their native virtues and potencies. The time, during which a drug or a medicine exerts its curative virtues, is called its **Kála** or the period of action. That which immediately results from the use or application of a medicinal remedy is called its **Karma** or physiological action. The principle, in virtue of which the action is performed, is called its potency or **Viryam.** That, in which the action takes place, is called its receptacle or **Adhikaranam.** The means by which it is effected is called its agency or **Upáya,** while that what it accomplishes is called its therapentic effect or **Phalam.**

Of these the drugs of purgative virtue are possessed

of attributes which specifically belong to the earth and water. Earth and water are heavy, and naturally gravitate downward owing to their heaviness. Hence it is inferred that purgative drugs are largely endued with the specific attributes of earth and water, in virtue of which they are more strongly attracted towards the centre of the earth (gravity). Drugs endued with emetic properties are possessed of attributes which form the characteristics of fire and air. Fire and air are light, and naturally ascend upward owing to their lightness. Hence it is inferred, that emetic (Vamana) drugs are largely possessed of attributes, which are upcoursing in their nature. Drugs or substances endued with both emetic and purgative virtues are characterised by attributes belonging to both the aforesaid elements (earth and fire).

Drugs, which soothe the deranged bodily humours, are permeated with qualities which specifically belong to the principle of the sky. Astringent (Sangráhaka) drugs are endued with attributes, which specifically belong to the air owing to the drying character of the latter element. Appetising (Dipana) drugs are largely possessed of attributes which belong to the material principle of fire. Lekhana (Liquefacient) drugs or substances are endued with attributes which belong to fire and air. Constructive or restorative (Vringhanam) drugs or substances are endued with attributes which speci-

fically belong to earth and water. These inferences should be carefully remembered at the time of prescribing medicines.

Authoritative verses on the subject:—The deranged bodily Váyu readily yields to the curative efficacies of drugs possessed of attributes, specifically belonging to the earth, fire and water, while the deranged Pittam is speedily soothed or restored to its normal state by drugs having attributes, specifically belonging to the earth, water and air. Similarly, the deranged Kapham is pacified by drugs possessed of attributes which characterise the sky, fire and air.

The bodily Váyu is increased by the use of drugs possessed of attributes which specifically belong to the sky and air, while the Pittam is increased by the use of those which are largely endued with the specific attributes of fire. The bodily Kapham of the body is increased by the use of drugs which are largely endued with the specific attributes of the earth and water. Thus having ascertained the dominant attributes of drugs, a physician should use them for the pacification of two or more of the deranged humours of the body according to the exigencies of a case.

Of the eight-fold potencies of a drug, such as cooling, thermogenetic, oleaginous, heavy, parchifying, plastive, keen and slimy, keenness and thermogenetic

potency should be ascribed to the attributes of fire ; cooling potency and that of engendering slime, to the predominance of the attributes of water in a drug or substance ; oleaginousness, to the predominance of the attributes of the earth and water ; plastive potency, to the predominance of the attributes of water and the sky ; parchifying potency, to the excess of the attributes of air ; non-slimy potency (Vaishadyam), to the predominance of the attributes of earth and air ; and heavy and light digestion, to the same cause.

Of these, oiliness and thermogenetic potency prove curative in respect of the deranged Váyu, while cooling potency, plastive potency, and that of engendering slime subdue the deranged Pittam. Keenness, parchifying and non-slimy potencies conquer the deranged Kapham. Substances, which are heavy in digestion, destroy the deranged Váyu and Pittam, while those which are light in digestion (easily digestible substances) prove curative in respect of the deranged Kapham.

Of these, softness, coldness and heat may be perceived by touch. The properties of sliminess and its opposite may be perceived by the eyes and touch. The properties of dryness and oiliness of a drug may be perceived with the eyes ; keenness of a drug from the fact of its producing pain in the mouth ; and [heat and cold, by the sensation of comfort (pleasure) or discomfort—**A. Text**] The fact of heavy (insufficient)

digestion should be inferred from the frequent passing of stool and urine, as well as from the expectoration of Kapham, while the contrary should be presumed from the constipation of the bowels, retention of urine and disorders of the abdominal Váyu (flatulence, distension of the abdomen, etc.). A specific taste is detected in material principles of similar properties. As for example, a drug or a substance, which is heavy and endued with a sweet taste, should be deemed as belonging to the group of the earthy matter (largely possessed of attributes characterising earth-matter). Similarly, a substance, which is sweet and oily in its character, should be regarded as belonging to one in which the principle of water predominates.

Authoritative verse on the subject :—Properties, which characterise drugs and substances, may be as well found in a human organism, and the normal continuance, aggravation or diminution of the deranged humours is due to the action of the drugs (substances).

Thus ends the forty-first Chapter of the Sutrasthánam in the Sushruta Samhitá which treats of specific properties of drugs.

CHAPTER XLII.

Now we shall discourse on the Chapter, which treats of the specific properties of flavours **(Rasa-Vishesha-Vijnaniya-madhyayam).**

The properties of sky (Ákásha), air (Pavana), fire (Dahana), water (Toya) and earth (Bhumi) are sound touch, colour, taste and smell, each of the preceding elements possessing properties less by one than those of the one immediately succeeding it in the order of enumeration.*

[Since a matter is designated after the name of the preponderant natural element, which enters into its composition], taste is said to be a water-origined principle. All material elements are inseparably connected with one another, and there is a sort of interdependence among them, each one contributing to the continuance of the other and jointly entering, to a more or less extent, into the composition of all material substances. This water-origined flavour (Rasa), which becoming modified through its contact with the rest of the material

*To put it more explicitly the property of sound belongs to the sky (Ákásha). The properties of sound and touch appertain to the air (Váyu). The properties of sound, touch and colour form the characteristics of Fire (Teja). Sound, touch, colour and taste form the specific properties of water (Toya). Sound, touch, colour, taste and smell mark the earth matter (Bhumi).

elements, admits of being divided into six different kinds, such as sweet, acid, saline, pungent, bitter and astringent. These, in their turn, being combined with one another, give rise to sixty-three different kinds. A sweet taste is largely endued with attributes which specifically appertain to the material principles of earth and water. An acid taste is pre-eminently possessed of attributes, which belong to the elementary principles of earth and fire. A saline taste is mostly endued with attributes which characterise the elements of water and fire. A pungent taste is largely possessed of attributes, which mark the elementary principles of air and fire. The specific attributes of air and sky predominate in a bitter taste. The specific properties of earth and air should be regarded as dominant in an astringent taste.

Tastes such as sweet, acid and saline are endued with the virtues of subduing Váyu. Tastes such as sweet, bitter and astringent are possessed of the virtue of subduing the deranged Pittam. Tastes such as pungent, bitter and astringent tend to subdue the deranged Kapham.

The Váyu is a self-origined principle in the human organism. The Pittam owes its origin to the bodily heat (Ágneya), while the origin of Kapham is ascribed to the presence of watery (Saumya) principle in the body. Tastes such as sweet, etc. are augmented by

causes in which they have their origin, and prove soothing or pacifying in respect of causes other than those which produce them.

According to certain authorities, there are only two kinds of tastes, owing to the two-fold (hot and cold) nature of the temperament of the world. Of these the tastes such as sweet, bitter and astringent are cold in their properties, while the pungent, acid and saline ones exercise fiery or heat making virtues. The tastes such as sweet, acid and saline are heavy and emollient in their character, while the pungent, astringent and bitter ones are dry and light. The watery (Saumya) tastes are cold. The fiery (Ágneya) ones are hot.

Coldness, dryness, lightness, non-sliminess, suppression (of the urine or ordure) form the characterstic properties of the Váyu. An astringent taste should be considered as possessed of the same properties as the Váyu, and hence it (astringent taste) increases the coldness, dryness, lightness, non-sliminess and arrestiveness of the latter with its specific coolness, dryness, lightness, non-sliminess and arrestiveness.

Heat, pungency, dryness, lightness, and non-sliminess form the specific properties of the Pittam. A pungent taste, which is possessed of the same properties as the Pittam, respectively increases the heat, pungency,

dryness, lightness and non-sliminess of the latter with the help of similar properties of its own.

Sweetness, oiliness, heaviness, coldness and sliminess form the specific properties of Kapham. A sweet taste, which is possessed of the same properties as the Kapham, respectively increases the sweetness, oiliness, heaviness, coldness and sliminess of the latter with the help of similar properties of its own. A pungent taste is endued with properties which are contrary to those of the Kapham, hence the sweetness, oiliness, heaviness, coldness and sliminess of the latter, are respectively destroyed by the pungency, dryness, lightness, heat and non-sliminess of the former. These have been cited only by way of illustration.

Characteristics of Tastes :—Now we shall describe the characteristics of tastes. A taste, which is pleasant, proves comfortable to, and contributes to the life-preservation of a man, keeps his mouth moist, and increases the quantity of bodily Kapham, is called **Sweet** (Madhura). A taste, which produces tooth-edge and increased salivation, and increases the relish for food, is called **acid** (Amla). A taste, which imparts a greater relish to food, produces salivation and softness of a part, is called **saline** (Lavana). A taste, which produces a burning sensation at the tip of the tongue attended with a tingling of the part and headache, and is instantaneously followed

by a running at the nose (fluent coryza) is called **pungent** (Katuka). A taste, which gives rise to a sort of sucking sensation at the throat, removes the slimy character of the cavity of the mouth, gives risé to the appearance of goose-flesh on the skin, and increases the relish for food, is called **bitter** (Tikta). A taste, which brings about the dryness of the mouth, numbs the palate, obstructs the throat, and gives rise to a drawing, pressing sensation in the region of the heart, is called **astringent** (Kasháya).

Specific virtues of tastes:—Now we shall describe the specific virtues of tastes. Of these, the sweet taste is possessed of the virtue of increasing the quantity of lymph-chyle, blood, flesh, fat, bone marrow, albumen (ojas), semen, and milk in a parturient woman. It materially contributes to the growth of bones, strengthens the eyesight, favours the growth of hair, improves the complexion of the body, brings about the adhesion of fractured bones (Sandhanam), and purifies the blood and the lymph-chyle. Likewise, it proves wholesome to infants, old and weak men and ulcer-patients (suffering from Endocarditis—Urah-Kshata) and is most coveted by bees and ants. It exhilarates the mind as well as the five sense-organs, relieves thirst, swooning and a burning sensation of the body, and originates Kapham. Similarly, it favours the germination of intestinal

parasites. Largely and exclusively partaken of, it brings on cough, dyspnœa, flatulence (Alasaka), vomiting, sweet taste in the mouth, hoarseness of the voice (aphonia), worms in the intestines, tumours, elephantisis, Vasti-lepa (mucous deposit in the bladder), Gudopolepa (mucous or slimy deposit in the anus), and Abhisandya (ophthalmia), etc.

Acid taste :—An acid taste should be regarded as a digestant of assimilated food, and is endued with resolving, appetising and carminative properties. It sets in the natural emission of flatus and urine, restores the natural movements of the bowels, lessens the tendency to spasms, and gives rise to an acid (digestive) reaction in the stomach, and to a sensation of external shivering. It originates a slimy or mucous secretion and is extremely pleasant or relishing. An acid taste, though possessed of the aforesaid virtues, brings on tooth-edge, with sudden closing of the eyes, appearance of goose flesh on the skin, absorption of Kapham and looseness of the body in the event of its being largely partaken of to the exclusion of all other tastes. Owing to its fiery character, the taste under discussion sets in a process of suppuration in cuts or burns, or in incised, lacerated or punctured wounds, as well as in those, which result from external blows, or are due to fractures, swellings, or falls, or are brought about as the after effects of any idiopathic distemper,

or which are tainted with the urine of any venomous animals or through contact with any poisonous animal or vermin. It gives rise to a burning sensation in the throat, chest and the region of the heart.

Saline taste :—A saline taste is possessed of corrective (purgative and emetic) virtues, favours the processes of suppuration and spontaneous bursting of swellings, brings about the looseness or resolution of any affected part (ulcer), is heat-engendering in its property and proves incompatible with all other tastes. It cleanses the internal passages or channels of the organism and produces softness of the limbs and members of the body. A saline taste, though possessed of the aforesaid properties, may bring on scabies urticaria, œdematous swellings, loss or discoloration of the natural complexion of the body, loss of virile potency, distressing symptoms affecting the sense-organs, inflammation of the mouth and the eyes, hæmoptysis, Váta-rakta (a kind of leprosy) and acid eructations etc., in the event of its being largely partaken of to the exclusion of all other tastes.

Pungent taste :—A pungent taste is endued with appetising, resolving (Pachana) and purifying properties in respect of ulcers etc.), and destroys obesity, languor, deranged Kapham and intestinal parasites. It is antitoxic in its character, proves curative in

cases of Kushta (skin diseases) and itches, and removes the stiffness of the ligaments. It acts as a sedative and reduces the quantity of semen, milk and fat. A pungent taste, though possessed of the aforesaid virtues, may bring on vertigo, loss of consciousness, dryness of the throat, palate and lips, burning sensation and a high temperature of the body, loss of strength, tremor, a sort of aching or breaking pain, and a neuralgic pain (Vata Shula) in the back, sides and the extremities, etc. in the event of its being largely partaken of in exclusion of all other tastes.

Bitter taste :—A bitter taste serves to restore the natural relish of a person for food and brings on a sense of general languor. It is a good appetiser, and acts as a good purifying agent (in respect of ulcers, etc.), and proves curative in itches and urticaria. It removes thirst, swoon and fever, purifies mother's milk, and is possessed of the virtue of drying up urine, ordure, mucous, fat and pus, etc. A bitter taste, though possessed of the aforesaid properties, may bring on numbness of the limbs, wry-neck, convulsions, facial paralysis, violent headache, giddiness, and an aching, cutting and breaking pain, as well as a bad taste in the mouth in the event of its being largely partaken of in exclusion of all other tastes.

Astringent taste :—An astringent taste is possessed of astringent, healing, styptic (Stam-

bhana), purifying, liquefacient, drying and contracting virtues. It lessens secretions from mucous membranes. An astringent taste, though possessed of the above-said properties, may bring on the peculiar type of heart disease known as (Hridroga) parchedness of the mouth, distention of the abdomen, loss of speech, wry-neck (Manya Stambha), throbbing or quivering and tingling sensations in the body with contraction of the limbs and convulsions, etc.

Now we shall make a general classification of the drugs according to their **taste**.

Madhura-Groups :—The drugs forming the groups known as the Kákolyádi-Gana, as well as thickened milk, Ghee, lard, marrow, Sháli and Shashtika rice, Yava, Godhuma, Másha pulse, Shringátaka, Kasheruka, Trapusha, Erváruka. Alávu, Kálaukata Ankalodya, Piyála, Pushkara, Vijaka, Káshmarya, Madhuka (Moula), Drákshá, Kharjura, Rájádana, Tála, Nárikela, modifications of the expressed Juice of Ikshu (Sugarcane), Valá, Ativalá, Átmaguptá, Vidári, Pyashyá, Gokshuraka, Kshiramorata, Madhuliká, and Kushmánda etc. are generally included within the Madhura group.

Acid Groups :—The fruits known as Dádima, Ámalaka, Mátulánga, Ámrutaka, Kapittha, Karamarda, Vadra, Kola, Práchiná-Ámalaka, Tintidhi,

Koshámra, Bhavya, Párávata, Vetraphala, Lakucha, Amla-Vetash, Dantashatha and curd, whey, Surá, Shukta, Sauvira, Tushodaka and Dhányamla, etc. are generally included within the acid group.

Saline Group :—The different kinds of salt such as, Saindhaba, Sauvarchala, Vida, Fákya, Romaka,. Sámudraka, Paktrima, Yavakshára (nitrate of potash), Ushara and Suvarchika collectively form the **Saline group.**

Pungent Group :—The component drugs which form the groups known as the Pippalyádi and the Surasadi-Ganas and Shigru, Madhu-sigru, Mulaka, Lashuna, Sumukha, Shitashiva (camphor), Kushtha, Devadáru, Harenuká, Valguja-phalam, Chandá, Guggula, Mustha, Langalaki, Shukanasa and Pilu etc. and the components of the group known as Salasaradi gana collectively form the pungent group.

Bitter Group :—The component members of the groups of medicinal drugs known as the Áragva-dhádi-Gana and the Guduchyádi-Gana together with Mandukparni, Vetra-karira, Haridrá, Dáruharidrá, Indra-yava, Varuna, Svádu-kantaka, Saptaparna, Vrihati, Kantakári, Shankhini, Dravanti, Trivrit, Kritavedhana, Karkotaka, Káravellaka, Vártáka, Karira, Karavira, Sumanah, Sankha-pushpi Apámárga, Tráyamáná, Ashoka, Rohini, Vaijayanti, Suvarchalá,

Punarnavá, Vrishikáli and Jyotishmati, etc. collectively constitute the bitter group.

Astringent Group :—The component members of the groups known as the Nyágrodháde-Gana, the Amvashtadi-Gana, and the Priyangvádi and the Rodhrádi Ganas, Triphalá, Shallaki, Jambu, Ámra, Vakula, Timduka fruits, Katakha fruits, Shaka fruits, Pashánabhedaka, the fruits of trees known as the Vanaspatis (lit : lords of the forest, such as the Vata, the Ashvattha etc.) and most of the component members of the group known as the Salasaradi Gana, as well as Kuruvaka, Kovidáraka, Jivanti, Chilli, Pálanká and Sunishanuaka, etc. and grains and pulse of the Nevára and Mudga species, collectively form the astringent group.

These tastes, in groups of different combinations, number sixty-three in all ; as for example, fifteen, computed by taking two at a time ; twenty, computed by taking three at a time ; fifteen, computed by taking four at a time ; six, computed by taking five at a time and six, being severally computed, thus making up an aggregate of sixty-three.

Authoritative verse on the subject :—The man, who gradually habituates himself to the use of each of the six aforesaid tastes,

enjoys a sort of immunity from their injurious action in the same manner as, a strong man, who makes himself successively accustomed to the action of the three deranged humours of his body, is not easily affected by their pathogenetic properties.

Thus ends the forty-second Chapter of the Sutrasthánam in the Sushruta Samhitá, which treats of the specific properties of flavours.

CHAPTER XLIII.

Now we shall discourse on the Chapter, which treats of the mode of administering emetics **(Vamana-Dravya-Vikalpa-Vijnaniya-madhyayam).**

Of all emetic fruits the Madana (seeds) should be deemed as the best (most active). Madana fruits should be dried in the sun and powdered. Then a Pala weight (eight tolás) of the powder should be stirred in a decoction of Pratyakpushpi, Sadá-Pushpi, or Nimva, and given to the patient with honey and Saindhava salt, for emesis. As an alternative, a potion consisting of the powders of raw Madana fruits, stirred in a decoction of Vakula and Ramyaka, and heated in fire, should be administered with the addition of honey and rock-salt. A gruel, consisting of sesamum rice and powders of green Madana fruits, boiled together, should be given to the patient. Likewise matured though not ripe Madana fruits should be stored in a box made of the blades of Kusha grass. The box should be plastered over with a composition of cowdung and clay and kept buried in a bushelful of Yava, Tusha, Mudga, Másha pulse or Shâli rice for eight consecutive nights. Then having extracted them, fully burst out, with the heat of the covering grain, their kernels should be separated from

their seeds and dried in the sun. Then having pasted them with curd, honey and the levigated paste of sesamum they should be again dried in the sun, after which they should be kept in a clean vessel. A Pala weight of the aforesaid prepared powder should be pounded in a decoction of Yastimadhu or of any of the drugs of the Kovidárádi group over night, and given to the patient on the following morning, through the medium of honey and Saindhava salt. The patient should take it looking towards the north or the east, and the following benedictory Mantra should be recited on the occasion.

Metrical texts :—"May the gods Bramha, Daksha, Ashvis, Rudra, Indra, the earth goddess, the moon, the sun, the fire, the wind, the concourse of holy sages (Rishis) and the material elements with the curative properties of drugs they originate and nourish, preserve thee. May the potion prove wholesome to you, as the elixirs prove wholesome to the Rishis, the nectar to the gods, and ambrosia to the good Nagas."

This emetic medicine should be specially employed in cases of catarrhal fever, catarrh, and internal abscess. In case of insufficient or unsatisfactory action of the potion, the drugs known as Pippali, Vachá, and a paste of Gaura-Sarsapa and Saindhava salt should be added to it. It should be administered warm and in repeated doses until the symptoms of emesis would fully

appear. In the alternative, powders of Madana kernels soaked in and saturated with their decoction and subsequently dried, should be administered through the same vehicle (decoction of the Madana kernels); or milk cream boiled with the kernels of Madana fruits should be administered with honey; or a barley gruel made with milk prepared as above should be prescribed for the purpose. This emetic measure should be resorted to in cases of Hæmatemesis or in Hæmorrhage from the bowels or generative organs and burning sensation in the heart due to the action of the deranged Pittam.

Milk, boiled with the kernel of a Madana fruit, should be curdled, and the cream of the curd or the curd itself so prepared should be used for emetic purposes in cases of water-brash, vomiting, syncope and dyspnœa. The essence (Rasam) of the seed pulps of Madana fruits should be pressed out and condensed in the manner indicated in connection with the extraction of oil (Sneha) of Bhallátaka, and the patient should be made to lick that condensed essence in cases where the Pittam would be found to have shifted into the natural seats of Kapham. Sun-dried and pulverised Madana fruits, mixed with a decoction of Jivanti, may be administered in its stead.

A decoction of the kernels of Madan seeds (Majja), saturated with powders of Pippali, Yádi or a potion consist-

ing of the same powder mixed with a decoction of Nimva or Rupika, should be prescribed in cases of lymphatic (Kaphaja) diseases due to acts of Santarpanam (use of emollient remedies), or the emesis in such cases should be effected with a decoction of Madhukam, Káshmari and Drákshá saturated with the aforesaid powder. Thus the emetic remedies made of Madana fruits are discharged.

Pulverised Jimutaka flowers may be used in the same manner and through the same medium or with the same adjuvants and for same purposes, as the preceding (Madana fruit). Jimutaka fruits should be pulverised in their raw or unripe state and dried in the sun, and a gruel made with milk boiled with the same powder should be given to a patient for emesis; or milk-cream, boiled with the powder of Jimutaka fruits (lit :—flowers*) powdered in their mature or hardened (Romesha) state, should be given; or the surface cream of milk boiled with the powders of full grown (Aromasha), greenish yellow Jimutaka fruits, or a Surá (wine) made of their decoction should be prescribed. These emetic remedies should be used in cases of disinclination for food through the action of deranged Kapham (lymphatic derangements), cough, dyspnœa, jaundice and in phthisis as well, like the compounds of Madana fruits described

* Fruits include flowers.

before. Mature Kutaja or Kritavedhana fruits may be used for emetic purposes in similar combinations and through similar mediums as the Madana fruits described before. Powders of Iksháku fruits (Kushuma), similarly prepared with milk, curd, etc., may be used for emetic purposes in cases of cough, asthma, vomiting and non-relish for food due to the action of deranged Kapham (lymphatic disorders).

The emetic compounds of Dhámárgava flowers are identical with those of the kernels of Madana fruits, the former being regarded as specifically indicated in cases of chemical poisoning, Gulma (internal gland), abdominal dropsy, cough, asthma, as well as in diseases due to the action of deranged Kapham (lymphatic disorders). The pulps or kernels of Kritavedhana seeds should be soaked in the expressed juice of emetic drugs and subsequently reduced to powder. The powder, so prepared, should be strewn over an Utpala or any other flower and the patients should be made to smell it in the case where the Kapham would be found to have changed its seat with the bodily Váyu. Likewise, in cases of excessive derangement of the bodily humours, the patient should be given a stomachful of barley gruel and then made to eject the contents of his stomach by causing him to smell such a medicated flower. Sternutatoric (Shiro-virechanam) or emetic or purgative drugs prove most efficacious after

being soaked in or saturated with the expressed juice of their own.

Authoritative verses on the subject :—Thus a general outline of the leading characteristics of the emetic drugs in general has been given. An intelligent physician should choose an emetic remedy in consideration of the season of the year and the strength of the disease, and should try to set in the process of ejection in a patient either with the help of the expressed juice, paste or powder of the prescribed drug duly administered through the medium of an article of food or drink, or through an electuary.

Thus ends the forty-third Chapter of the Sutrasthánam in the Sushruta Samhitá which deals with the choice and mode of administering emetics.

CHAPTER XLIV.

Now we shall discourse on the Chapter, which treats of the choice of purgatives **(Virechana-Dravya-Vikalpa-Vijnaniya-madhyayam.)**

Metrical Texts :—Of the purgative roots, the roots of reddish **Trivrita** should be deemed the most effective. The barks of Tilvaka and the fruit known as **Haritaki** are the most potent of all purgative barks and fruits. Similarly, the oil of castor seeds (**Eranda-Taila**), the expressed juice of **Káravelliká** and the milky exudations of **Sudhá** plant are the most effective of all such purgative oils, expressed juices and milky exudations of plants, etc. These drugs or substances form the principal purgative remedies (in our pharmacy), and we shall discuss the mode of their administration in successive order.

A purgative remedy consisting of the sound and matured roots of Trivritam, soaked in the expressed juice of the principal purgative drugs and subsequently pulverised and mixed with a considerable quantity of Saindhava salt and powdered Nágara, should be administered through the medium of curd or sour rice gruel, etc. to a patient, suffering from a disease due to the derangement of the bodily Váyu.

The same powder mixed with modifications of sugar-cane juice (such as treacle, sugar etc.), or with decoctions of drugs belonging to the Madhurádi group (Kákolyádi-gana), or with milk, should be prescribed for a patient laid up with Pittaja distemper. In diseases due to the deranged action of the Kapham the same powder should be administered with a decoction of Guduchi, Arishta or Triphalá, or with the addition of pulverised Vyosha and cow's urine.

One part of the same powder (Trivrit), mixed with one part of old treacle and the drugs known as Trivarnaka, and Tryushana, should be administered for purgative purposes in a disease (due to the concerted action of the deranged Váyu and Kapham). As an alternative, a Prastha mea sure (four seers) cf the decoction of the Trivrit roots, mixed with a Kudava measure (half a seer) of their paste, and a Karsha (two tolás) weight of Saindhava salt and Nágara, and boiled together, and then formed into a condensed compound should be used; or one part of the paste of the same roots, mixed with half a part each of rock-salt and powdered Nágara, should be administered through the vehicle of cow's urine. A compound consisting of one part of each of the following drugs viz., powdered Trivrita roots, Nágara and Haritaki, and a half part of each of such drugs as powdered Maricha, Devadáru, Vidanga and ripe Puga nuts, mixed with rock-salt, and administered through

the medium of cow's urine, should be considered as an effective purgative (in diseases of whatsoever type).

Powders of purgative drugs taken in adequate measures and soaked in their own juice should be boiled with their roots and made into pills (Gutiká) with clarified butter and administered as occasion would arise. As an alternative, powders of purgative drugs pasted with clarified butter boiled with their roots should be made into boluses, and the intelligent physician should administer them through the medium of clarified butter, prepared as above, whenever necessary. A quantity* of treacle should be kept boiling over an oven, and a (halt part) of the pu'verised purgative roots should be cast into it, a little before it is completely boiled. Then the basin should be taken off the fire, and powders of aromatic drugs known as Trijáta strewn over it, and the compound subsequently made into boluses (Gutiká) of adequate size according to the requirements of the case under treatment.

One part of any of the pulverised purgative drugs (such as the Trivrit roots, etc.) should be boiled with four parts of their own decoction, and one part of powdered wheat steamed in the fumes of a separate quantity of a similar boiling decoction, should be pounded with a quantity of clarified butter boiled and prepared with

* The quantity of old treacle should be equal to the aggregate weight of the other drugs in the compound under similar circumstances.

the same decoction. Then having cooked a quantity of thin treacle in a separate utensil, powders of wheat and purgative drugs prepared as above, should be cast into it, immediately before being completely cooked, and the vessel should be taken down from the oven and allowed to cool. Then this confection (Modaka) should be perfumed with aromatic drugs and regarded as ready for use. In short, this purgative Modaka is good food as well.

Purgative preparations of Mudga, etc. :—The soup of Mudga pulse saturated with the decotion of a purgative drug, and taken with clarified butter and rock salt, acts as a good purgative as well. Similarly, soups of other pulses (such as the Musara, etc.) soaked in a decoction of any of the purgative drugs and drunk with the aforesaid adjuvants, exert purgative virtues. Drugs possessed of emetic properties may be used through the preceding media of pulse-soups as well.

A bit of sugar-cane should be longitudinally split, and then paste of Tribhandi should be placed in its middle ; then it should be tied up (with the blades of Kusha grass), and plastered over with a coat of clay, and inserted in a gentle fire of dung cake. After that, it should be taken out of the fire, fully roasted ; the juice squeezed out and cooled, would prove a good purgative to a patient laid up with a Pittaja distemper.

A compound consisting of equal parts of sugar and powdered Ajagandhá, Tvakkshiri, Vidári and Trivrit and licked with honey and clarified butter, proves curative in a fever with thirst and a burning sensation of the body.

A compound consisting of one part of pulverised Trivrit and a quarter part each of the drugs known as Tvak, Patram and Maricha, and administered with an adequate quantity of honey and sugar, should be regarded as a good purgative for delicate persons.

A Pala weight of sugar should be boiled with a half Kudava weight of honey, and Trivrita powders to the weight of a quarter part (of the combined weight of honey and sugar) should be added to the boiling compound at the later part of the cooking. The remedy should be administered cool, and looked upon as a good purger of Pittam.

A compound consisting of equal parts of powdered Trivrit, Shyámá (Vriddha-Daraka), Yavakshára, Shunti and Pippali, and taken with honey, acts as one of the most effective purgatives in diseases due to the action of the deranged Kapham.

Over-ripe Pathyá, Káshmari, Dhátri, Dádima and Kola fruit taken with their seeds or stones, should be boiled (with a quantity of water weighing sixteen times their combined weight). The decoction thus obtained should be boiled with (castor)

oil, and the juice of Amlaphala etc. (to the weight of a quarter part thereof), should be added to it. The whole should be boiled together until reduced to a considerable consistence. The powders of the three aromatic drugs (Trisugandha) and Trivrit* should be then added to it, which should be administered to a patient as an electuary with honey. This remedy will prove a good purgative in respect of a delicate person of Kaphaja temperament.

A compound, consisting of one part of powdered Nili fruit, one part of powdered Tvak and Ela, and two parts of pulverised Trivrit, and mixed with an adequate quantity of sugar, and taken with honey and the juice of Amlaphalam, should be regarded as a purgative remedy possessed of the virtue of destroying the concerted action of the three deranged humours of the body.

A compound, consisting of equal parts of powdered Trivrit, Shyámá (Vriddhadáraka), Pippali and Triphalá and made into a confection (Modaka) (with the addition of honey and sugar), should be regarded as one of the most potent cures (purgatives) for Sánnipata (simultaneous derangement of the three vital humours), hæmoptysis and fever.

A compound consisting of three parts of Trivrit,

* The weight of honey and pulverised Trivrit should be equal to a fourth part of the entire quantity of medicine taken at a time.

one part of Triphalá, one of Yavakshára, one of Krishná (Pippali), and one of Vidanga, pounded together and used as an electuary with the addition of honey and clarified butter, or made into boluses (Gutiká) with treacle, proves curative in cases of enlarged spleen, in Gulmas due to the action of the deranged Kapham and Váyu, in Halimaka (Chlorosis), as well as in cases of abdominal dropsy, etc. The present remedy (purgative) is one of the most harmless purgative compounds (of our pharmacopœia). A purgative compound consisting of Shyámá (Vriddhadáraka), Trivrit, Nili, Katvi, Mustá, Durálabhá, Chavya, Indrayava and Triphalá, administered through the vehicle of clarified butter, essence of meat, or water, is commended to persons of dry temperament.

Preparations of Purgative Asavas (Wines):—All purgative drugs* should be duly boiled in water. Three parts of the decoction thus prepared should be mixed with two parts of cold powdered barley (Phanitam) and again boiled over a fire. Then after boiling it, it should be taken down from the oven, cooled and poured into a pitcher previously coated inside with a special plaster.† Then according to the difference of the season (cold or hot),

* Several authorities exclude the plant known as Sudhá (Manasá), while others stick to Trivrita alone in exclusion of all other drugs.

† A new earthen pitcher is first washed with water and dried in the shade. Then its inside is coated with a plaster of honey and powdered Pippali and is fumigated with the fumes of Aguru (Eagle wood).

the pitcher should be kept buried in a heap of paddy for a month, or a fortnight. It should be taken out and understood to be ready for use as soon as it would emit a winy or fermented odour. Ásavas (fermenting liquours) of animal urines and alkaline substances should be likewise prepared in the foregoing manner.

Preparations of purgative rice Sura (Wines) etc. :—Quantities of Másha pulse and Sháli rice should be respectively first soaked and washed in a decoction of purgative roots. Then they should be dried and pounded together and made into balls, which should be subsequently dried in the sun and again pulverised.* After that a separate quantity of Shali rice steamed in the vapours of the aforesaid decoction, and kept apart, should be made into cakes. Then three parts of these cakes should be mixed with one part of the aforesaid powdered ball. The compound thus obtained should be soaked in an adequate quantity of that purgative decoction previously kept apart in an earthen pitcher of the plastered type, described before. The Surá should be deemed ready for use, as soon as it would emit the peculiar honey-like smell. Surás of emetic drugs should be likewise made in the same manner.

Preparations of purgative Souvirakas (Barley Wines) :—Trivrit roots and drugs

* For imparting to it the necessary Enzyme.

belonging to the groups of Vidárigandhá and major Panchamulam, as well as Murvá, Shárngashtá, Sudhá, Haimavati, Triphalá, Ativishá and Vachá should be mixed together and then set apart in two equal parts. A decoction should be made of one of them, while the other should be reduced to a state of powder. After that, a quantity of well thrashed and huskless barley should be soaked in the aforesaid decoction for seven days, and should be subsequently dried and fried a little. Then three parts of the latter and one part of the aforesaid powder (powdered Trivrita roots etc.) should be mixed together and soaked in the aforesaid cold decoction of those drugs. The mixture should be then kept into an earthen pitcher of the foregoing type and administered in adequate doses as soon as the characteristic winy smell of the mixture (Játarasa) would be detected. The preparation is called the purgative Sauvirakam.

Preparations of purgative Tushodakam (fermented liquors of barley with husks):—The drugs enumerated in connection with the foregoing preparation should be mixed together and divided in halves and kept in two separate vessels. One half of the mixture should be well-thrashed and tied up in a piece of clean linen with a quantity of unthrashed barley in husks and should be boiled with a decoction of Ajashringi in a separate basin. Then barley in husks

should be separated from the rest of the components of the mixture after it has been thoroughly cooked. Then three parts of these barley grains subsequently thrashed should be again soaked in their decoction, and a fourth part of the aforesaid pulverised drugs (such as the roots of Trivrit, etc.) should be added to it, and the entire mixture should be kept in an earthen pitcher of the before mentioned type. This preparation is called Tushodakam (lit: Washings of husks), and should be used as soon as the characteristic smell of fermentation (Játarasa) would be emitted from the pitcher. The processes of preparing Sauvirakam and Tushodakam have been described. They should be used after the expiry of six or seven nights from the date of their being in the pitcher.

The rules and processes regarding the preparation of Trivrit compounds hold good in cases of similar preparations made of the rest of purgative drugs (such as, Danti, Dravanti, etc.)

The roots of Danti and Dravanti should be first pulled up and collected, after which they should be dried in the sun. After that, they should be mixed with honey and pasted Pippali and placed in a box of Kusha grass firmly tied up and plastered with a layer of clay. The box should be put into a fire of dried cowdung cakes. The compound inside the plastered grass box should be cooked according to the process of Putapáka,

and should be taken out and used in diseases due to the action of the deranged Kapham and Pittam and in combination and through vehicles described in connection with the purgative compounds of Trivrit.

Pastes (Kalkas) and decoctions of Danti and Dravanti should be boiled with clarified butter, and Chakra Tailam (sesamum oil pressed in an oil mill). The clarified butter, thus cooked and prepared, would prove curative in cases of Erysipelas, Kaksha, burning sensation of the body and Alaji, while cases of Meha, Gulma, retention of flatus, (kapham) and obstruction of the bowels would prove amenable to the oil above described. Diseases due to the retention of urine, semen and Váyu or fecal matter readily yield to one of the four oily substances (Chatuh-sneha, oil, clarified butter, lard and marrow) cooked and prepared with the paste and decoction of Danti and Dravanti.

A compound consisting of Danti, Dravanti, Maricha, Kanakáhvayá, Yavásaka, Vishva-veshaja, Mridviká, and Chitraka powdered together and successively soaked in cow's urine for seven days, should be administered for purgative purposes, through the medium of clarified butter. A diet of powdered barley, stirred in honey, should be given to the patient after the assimilation of the abovesaid medicine. Diseases such as indigestion, pain at the sides, jaundice, enlargement of the spleen as well as those due to the combined action of the

deranged Kapham and Pittam readily yield to the curative efficacy of this purgative remedy.

Twenty pulverised Pathyás mixed with the powders of Danti and Chitraka roots, each weighing a Pala in weight, as well as with two tola weights each of powdered Pippali and Trivrit, should be cooked with eight pala weights of treacle. The compound thus prepared should be made into ten large balls of confection (Modaka), each of which should be taken on every tenth day. Warm water should be used for drinking and bathing purposes while using the medicine, which does not entail any strict regimen of conduct (as non-exposure to cold wind, etc.). It proves curative in dysentery, jaundice, pile and cutaneous affections and subdues the three deranged humours of the body.

Trivridashtaka :—The nine following drugs, viz. Trikatu, Trijáta, Mustá, Vidanga and Ámalaka taken in equal parts, and eight parts of Trivit, and two parts of Danti roots should be separately pulverised and sieved through a piece of thin linen. The powders thus prepared should be pounded together and mixed with six parts of sugar and a little quantity of honey and rock salt.* Cold water should be given to the patient after he had taken the medicine, which proves curative

* The term little (Ishat) in the present instance stands for a quarter part.

in colic pain in the bladder (Vasti-Shula), thirst, fever, vomiting, anasarca (Shotha), chlorosis and vertigo. It does not entail any strict regimen of conduct like other purgatives and acts as a good eliminator of poison. The compound is called the Trivridáshtakam and is specially recommended in Pittaja affections. Persons, suffering from diseases due to the action of the deranged Pittam and Kapham, should take the medicine through the vehicle of milk. The medicine should be prescribed for rich persons, owing to its dietetic character.

Purgative barks :—The external skin of the Lodhra bark, to the exclusion of its inner lining, should be taken and pulverised. The powder, thus prepared, should be divided into three equal parts, two of which should be soaked in a decoction of the same (Lodhra) bark and filtered twenty-one times according to the process laid down in connection with the preparation of alkalis. The remaining third part of the powders should be soaked in the aforesaid filtered decoction and subsequently dried in the sun, and again soaked in a decoction of the drugs, which collectively go by the name of Dashamulam. The medicine should be prescribed in forms (wines, electuaries, etc.) previously described in connection with the Trivrit compounds.

The mode of preparing and administering purgative medicines out of barks endued with similar virtues has

been described. We shall presently deal with those made with purgative fruits.

Fruit Purgatives :—Sound and stoneless Haritakis administered in the way of Trivrit compounds prove curative in all forms of disease and in malignant sores and internal abscesses. They are the best of elixirs and improve the intellectual faculties. Haritaki and Vidanga, as well as rock salt, Nágaram, Trivrit and Maricha mixed in equal parts and taken with cow's urine, act as good purgatives. Similarly, powders of Haritaki, Bhadra-dáru, Kushtham, Puga-phalam, Saindhava salt and Shringaveram taken through the medium of cow's urine, act as good purgative. For purgative purposes, a man should lick a compound consisting of the powders of Nilini fruits, Nágara, Abhayá and treacle and subsequently drink a good draught of warm water. A compound composed of Haritakis pasted with a decoction of the drugs constituting the group of Pippalyádi and a bit of Saindhava salt, exerts an instantaneous purgative action.

Haritakis eaten with Nágaram or treacle and with a bit of rock salt added to it, is an excellent stomachic. The specific virtue of Haritaki consists in restoring the normal condition of the bodily Váyu (laxative), in rejuvenating an used up or exhausted frame, and in soothingly invigorating the sense organs. Haritaki destroys all diseases, which are due to the use of

sweet or richly cooked dishes (Santarpanam) such as, thirst, etc. Ámalakam is cooling, and refrigerent ; it subdues Pittam and Kapham and is antifat in its virtues. Vibhitakam is cooling ; it subdues Pittam and Kapham. The group of medicinal fruits known as the Triphalá consists of Haritaki, Ámalakam and Vibhitakam, which are collectively marked by an acid-astringent taste with a shade of bitter and sweet. Powdered Triphalá regularly taken with clarified butter of a three quarter part of its own weight acts as a regular panacea and is endued with a rejuvenating virtue.

All fruits possessed of purgative properties, should be used in the manner described in connection with Haritaki with the exception of Chaturangulas. The Chaturangula fruit should be collected in the proper season, and then kept buried for a week in a bed of sand. After that, they should be unearthed and dried in the sun, and their stones or seeds (lit. marrow) should be taken out. Then the essential oil of the seeds should be extracted by pressing them in an oil-mill like the seeds of sesamum, or by boiling them with water (hot expression). The oil is a good purgative for a child up to its twelfth year.

Hot water taken after having licked a compound consisting of Castor oil saturated with powdered Kushthá and Trikatus, acts as a good purgative. Castor oil taken with a decoction of Triphalas, double its own

measure, or with milk or extract of meat, acts as a good purgative, which should be prescribed for infants, old men, or persons debilitated from the effects of ulcer cachexia, or of delicate constitution.

I have finished describing the preparation and application of fruit purgatives. Now hear me, O Sushruta, discourse on similar milky exudations of plants and trees, etc. which are possessed of purgative properties. The milky juice of a Sudhá plant is the strongest of all purgatives, which being imprudently used by a medical ignoramus, may be attended with dangerous consequences, while the same in the hands of a judicious physician proves strong enough to disintegrate a mighty accumulation of deranged humours and to successfully combat many an irremediable distemper.

One part of the decoction of each of the drugs constituting the group of major Panchamulam and Vrihati, etc. should be mixed with one part of the milky juice of a Sudhá plant (thus forming an eighth part of the whole compound). After having boiled it over a charcoal fire, the compound should be taken with two Tola (kola) weights of any acid liquid (such as wine, sour rice gruel, cream of curd, etc.) in the manner of Trivrit compounds. A gruel made of rice saturated with the milky exudation of a Mahavriksha, or a sweetened, porridge-like preparation of the same substance (Utká-

rika) made with treacle, should be deemed as possessed of purgative properties. As an alternative, an electuary composed of sugar, clarified butter and the milky juice of a Snuhi plant, should be used for purgative purposes.

Powders of Pippali soaked in the milky juice of the same plant should be used with rock salt for moving the bowels. Powdered Kampillakam made into boluses with Snuhi juice may be as well prescribed for the same end. Powders of Saptalá, Shankhini, Danti, Trivrit and kernel of Áragvadham, should be saturated with cow's urine and then soaked in the milky juice of a Snuhi plant successively for seven consecutive days.* A smell of the powder thus prepared and strewn over the flower-garlands, and clothes worn by a man whose bowels are easily moved, acts as a mild purgative.

The use and preparation of purgative remedies concocted with roots, barks and milky exudations of plants, etc. have been described, which should be prescribed after carefully considering the nature of the case under treatment and according to their specific indications.

A compound consisting of three Shána weights (one tola and a half) of powdered Trivrit, three

* The mode of preparing the porridge is as follows :—First the wheat should be saturated with the milky juice of a Maha-Vriksha and then macerated. The powder should be then cooked with milk and treacle and made into a thick porridge.

Shána weights of powdered Triphalá pulp, and three Shána weights of powdered Vidanga, Pippali and Yavakshára, mixed and pounded together, should be licked with honey and clarified butter, or they should be made into a confection with treacle for purgative purposes. The medicine does not entail any strict regimen of diet and conduct. It is one of the most effective remedies (of our pharmacopœia) and proves curative in Gulmas, enlargement of the spleen, cough, Halimakam (chlorosis), non-relish for food and in diseases due to the action of the deranged Kapham and Váyu. A wise and intelligent physician should administer purgative medicines through the vehicles of clarified butter, oil, milk, Madya (wine) cow's urine, meat essence, or through the expressed juice of drugs, or through articles of food, or in forms of electuary. The six kinds of purgatives are the milky exudations, expressed juices, pastes, decoctions, cold infusions and powders of medicinal drugs or herbs, and each of these preceding factors should be deemed stronger than the one immediately following it in the order of enumeration.

Thus ends the forty-fourth Chapter of the Sutrasthánam in the Sushruta Samhitá, which treats of the choice of purgatives.

CHAPTER XLV.

Now we shall discourse on the Chapter, which deals with the rules to be observed in respect of liquid substances in general **(Drava-Dravya-Vidhi-madhyayam).**

Water Group :—Atmospheric, or rain water is possessed of a non-patent taste. It is ambrosial in its nature, pleasant and beneficial to life. It is enlivening,* invigorating or strength-giving, † refrigerent, frigorific, antipyrotic, anti-hypnotic, and conquers vertigo, drowsiness and fits of fainting. It is most wholesome to the human body. After having fallen upon the surface of the earth it acquires one of the six different tastes according to the nature of its receptacle such as, a river, or a Nada (a river with a masculine name), a pond, a tank (Vápi) ‡, a Kupa §, a Chunti ||, a fountain, an Artesian spring a Vikira ¶, fallow land (Kedár), or a pond covered over with a growth of aquatic plants

* Enlivens the body during fits of fainting and such like cases.

† Imparts strength to the exhausted or emaciated frames.

‡ A tank or a large well with its sides protected by buttresses of masonry work.

§ A well with flights of masonry steps descending to its bottom.

|| An ordinary well, unprotected by buttresses and unprovided with steps.

¶ A flow of subterranean water dug out of a bed of sand.

(Palvala). Certain authorities maintain that heavenly or atmospheric water having fallen on a red, brown, grey, yellow, blue or white coloured soil, respectively assumes a sweet, acid, saline, pungent, bitter or an astringent taste. But the theory is not a sound one in as much as the comparative predominance of the attributes of the five material principles in a particular soil determines the taste of the water contained therein. Water, contained or collected in a soil marked by a predominance of the attributes of earth-principle, acquires an acid and saline taste. Water, contained in a soil marked by a predominance of the attributes of fire, acquires a bitter and pungent taste. Water, contained in a soil marked by a predominance of the attributes of air, acquires an astringent taste. The sky is devoid of all tastes, and hence, the water contained in a soil, which is largely possessed of the specific attributes of that element, is characterised by the absence of any taste whatever. Only the last named kind should be used for drinking purposes where atmospheric water would not be available.

Atmospheric water (Ántariksha Jalam), in its turn, may be divided into four classes such as, rain water, hail water, frost water or dew, and snow water, of which the first is the best for its lightness. Rain water may be divided into two classes such as the Gángam and the Sámudram,

according as the rain-cloud is charged with vapours evaporated from the bosom of the Ganges or the sea. Gangetic rain generally descends in the month of Áshvina, but both kinds should be subjected to a test: The test in the case of Gángam rain water consists in exposing to it, for a Muharta (forty-eight minutes), a quantity of undiscoloured Shali rice in a silver bowl which is not extremely softened by boiling. To ascertain whether it is Gangetic rain water or not, Gangetic rain water should be ascertained from the fact of the aforesaid Shali rice not being in any way affected in its colour; whereas a change in its colour under exposure, as well as the fact of its being formed into shreddy or seedy balls mixed with slimy secretions, would indicate that the rain water had been formed of the vapours of the sea (Sámudram), and should be regarded as extremely unwholesome. Rain water from a cloud entirely formed of sea-vapours and collected in the month of Áshvina, is as wholesome as what is technically known as Gangetic rain water, but the latter is the best of the several kinds of atmospheric water.

The means of collecting atmospheric (rain) water is as follows:—A broad piece of clean and white linen should be hung out in the open air, (with a stone placed across the middle to dip its centre of gravity). The rain water thus collected should be kept in a

vessel. As an alternative, rain water flowing from the waterspouts of a house should be collected in a clean receptacle, and subsequently poured into a golden, silver or an earthen vessel. The water thus collected can be taken at all times, and may be substituted by any other terrestrial water in the event of its not being available at the time.

Terrestrial water is generally marked by a predominance of the specific properties of the sky, and admits of being grouped under seven sub-heads such as, well-water, river-water, lake-water, tank-water, fountain water, spring (Artesian) water, and Chunti (well unprovided with masonry steps) water. Atmospheric or spring water should be used for their high efficacy during the rains (Varshá). All kinds of water may be used in Sharat on account of their clearness. Lake or tank water should be used in Hemanta ; well and fountain water, in spring* (Vasanta) and summer ; and Chunti water, as well as all water not of recent origin, nor due to an excessive down-pour or inundation, should be used during Právrit.

Metrical Texts :—He falls an easy victim to internal and external diseases (cutaneous affections), etc., who drinks of or bathes in a pool of water,

* The " rains " in the present passage should be interpreted to mean the end of the rainy season or the month of A'shvina, and not the month of Bhádra, as its use is specially forbidden in that month.

which is full of poisonous worms, or is saturated with urine or fecal matter, or is defiled with germs of vermin or decomposed animal organisms, or is covered over with the growths of aquatic plants, or is strewn over with withered and decomposed leaves, or which in any way is rendered poisonous and contaminated, as well as he, who drinks and bathes in the freshly collected water of a pool or a reservoir during the rains.

A sheet of water, which is entirely covered over with the growths of aquatic plants such as, moss, zoophytes, water weeds, lotus leaves, etc., or which looks turbid owing to oozy mire, or is not exposed to the currents of fresh air, nor illumined by the sun or the moon, and is possessed of a definite smell, colour, and taste, should be regarded as contaminated or defiled (Vyápannam). Water may be affected with regard to the six categories of touch, sight, taste, smell, potency, and chemical transformation or re-action (lit : digestion). Roughness, sliminess, warmth, and the production of a shivering sensation (lit : tooth-edge) are the tactual defects (Sparsha-Dosha) of defiled water, whereas a varied colour, and the presence of mire, sand, and shreds of moss are the defects, which mark its look or appearance (Rupa-Dosha). A distinct taste marks the water, which is affected as regards its taste (Rasa-Dosha), while an unpleasant smell is the characteristic

of the water, which is affected as regards its smell (Gandha-Dosha). The water, which being taken gives rise to thirst and to a sense of heaviness of the limbs, colic, and a flueut coryza, is said to be affected or vitiated in its potency (Virya-Dosha), whereas that, which takes a long time to be digested, or is retained in the stomach for an inordinate length of time, is said to be affected as regards digestion or chemical transformation (Vipáka-Dosha). Atmospheric water is free from the abovesaid defects. The defiled or contaminated water should be purified by boiling it, or by heating it in the sun, or by immersing a red-hot iron, or hot sands or stones in the same, and its smell should be removed by perfuming it with the Nágeshvara, Champaka, Utpala, or Pátalá flowers, etc.

Metrical Texts :—Water should be drunk perfumed in a golden, silver, copper or an earthen goblet, or in a bowl made of bell metal or of precious stones. Contaminated water, as well as rain water accumulated in an improper season, should never be used for drinking purposes, inasmuch as it tends to derange the fundamental humours of the body, and is positively injurious to the human system. The man, who drinks, or bathes in, any contaminated water without previously purifying it as before directed, incurs the risk of being speedily affected with œdema, jaundice, cutaneous affections, indigestion, dyspnœa,

cough, catarrh, colic pains, abdominal glands, ascites or any other dreadful disease.

There are seven modes of purifying water such as, by immersing the Kataka fruits, the gems known as the Gomedha, the roots of lotus plants, or of aquatic mosses, a piece of linen, or a pearl, or a crystal in a pitcher or vessel containing it. The bottoms of a water pitcher are made of five different shapes such as, the Phalakam (rectangular wooden stool), the Tryashtakam (octagonal wooden tripod), the Manju Valayam (ring made of the blades of Manju grass), the Udaka-Manchiká (wooden scaffold for a pitcher) and the Shiky (pendent bracket). There are seven ways of cooling water, such as by exposing a water pitcher to currents of air, immersing a water pitcher (tied round with a piece of wet cloth) neck-deep in a vessel full of water, churning it with a stick, by fanning, or siphoning it by means of a piece of linen, or by burying a water pitcher underneath a bed of sand, or by keeping it suspended in a pendent bracket.

Metrical Texts :—The water, which is devoid of all smell or taste, and is pure, cool, limpid, transparent, refrigerent and pleasant, should be regarded as possessed of all the commendable traits. The water of rivers, (which drain the Jángala countries) and flow into the western sea, is light, and therefore wholesome. The water of rivers, which traverse

the marshy (Ánupa) countries and empty themselves into the eastern sea, is heavy and therefore not commended to be used. The water of rivers, which run into the southern sea, is neither too heavy nor too light owing to the fact of its traversing countries which have a Sádhárana character.

The water of rivers, which have their sources in the Sajhya mountains, begets cutaneous affections; while the water of those, which rise from the Vindhya mountains, produces Kushtha and Jaundice. The water of rivers, which rise on the mount Malaya, begets worms and intestinal parasites, while the water of those, that have their sources in the Mahendra mountain, begets elephantisis and abdominal dropsy. The water of rivers, which rise on the Himalaya, produces angina pectoris, (Hridroga), anasarca, diseases of the head, elephantisis, or goitre in persons using it for the purposes of life. Similarly, the water of rivers, which drain the eastern portion of the country of Avanti, or flow through its western part, begets piles; while the water of those, which rise on the mount of Páripátra is wholesome, strength-giving, and conducive to health.

Metrical Texts :—The water of clear and swift-running rivers is light, while the water of those, which are sluggish in their course and are covered with mosses and other aquatic plants, is heavy. The water of rivers, which run through Marudesha (Modern

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Marwar) is possessed of a bitter saline taste, or is endued with a sweet taste blended with a shade of the astringent, and is easily digestible and strength-giving in its properties.

Every kind of terrestrial water should be collected early in the morning, since it is obtained the clearest and coolest at that part of the day ; and since these two attributes by far form the most commendable traits in water.

Metrical Texts :—The water, which gets the light of the sun in the day and reflects the moon in the night, and which, moreover, neither produces Kapham nor a parched condition in the body, should be regarded as one in virtue with the atmospheric water. Atmospheric water, collected in a good and proper receptacle, has the virtue of subduing the three deranged humours of the body, and acts as a pure tonic and elixir, its virtue varying with the excellence of the vessel in which it is contained. The cool and limpid washings of the gem known as the Chandrakánta Mani (the moon-stone) should be regarded as possessed of the mystic virtue of warding off the attacks of monsters and demons, and of subduing the deranged Pittam. They are beneficial in fever and in cases of poisoning marked by a burning sensation of the body, etc.

Cold water usually proves beneficial in epileptic fits,

in hot seasons, and in a burning sensation of the body due to the deranged action of the Pittam, in blood-poisoning, hæmoptysis, abuse of wine (Madátya), loss of consciousness, fatigue or exhaustion, vertigo, Tamaka and vomiting. The use of cold water should be avoided in pain at the sides (pleurodynia ?), in catarrh, in rheumatism, in diseases of the larynx, in distention of the stomach by gas or air, in cases of undigested fæces, in the acute stage of fever, and just after the exhibition of any emetic or purgative remedy, in hic-cough, and immediately following upon an oily or fatty drink (Snehapána). River water produces Váyu and a parched condition in the body, and is light, stomachic and (Lekhana) liquefacient. On the contrary, that which is heavy, comparatively denser in its consistency, sweet, and cooling, brings on catarrh. The water of a lake (Sarasam) quenches thirst and is strength-giving, light, sweet and astringent. The water of a pond or a tank (Tadága) produces Váyu, and is sweet, astringent, and pungent in digestion. The water from a Vápi (a large tank) subdues the deranged Váyu and Kapham, and generates Pittam, and is pungent in taste and is found to be charged with a solution of alkali. The water from a Chunti is a good digestant, sweet, and parchifying, though it does not give rise to Kapham in the system. The water from a well (Kupa) generates Pittam and is appetising. It subdues the deranged Kapham, and is light and alkaline. The

water of a fountain is light, appetising, and pleasant, and destroys Kapham. The water of an Artesian spring is sweet, and subdues Pittam. It is antacid in its digestive reaction. The water from a Vikira is light, appetising, pungent, and is charged with potash (Khára). The water accumulated in an open field, or in fallow land, is heavy to digest and tends to augment the deranged humours of the body. The water of a Palvalam is possessed of the same virtue as the preceding one, with the exception that it greatly aggravates the deranged humours of the body. Sea-water has a fishy smell, and a saline taste ; it aggravates all the three deranged humours of the body. The water of an Ánupa (marshy) country is the source of many an evil. It is extremely condemnable, as it increases the slimy secretions of all the bodily organs, etc. The water of a Jángala country is free from the preceding baneful traits. It is faultless, acid in its digestive reaction (Vidáhi), is possessed of all commendable traits, and is pleasing and refrigerant. The water accumulated in a Sádhárana country is light, cool, pleasant and appetising (Dipanam).

Warm water subdues the deranged Váyu and Kapham. It is antifat, appetising, diuretic, (Vasti-shodhak) and febrifuge. It proves beneficial in cases of cough and dyspnœa, and is wholesome at all times. Water boiled down to a quarter part of its original

quantity and then cooled down with all its froth and ebullitions removed, is light and limpid, and may be safely commended to the use of all. Water, boiled overnight, should not be knowingly given to a thirsty person inasmuch as it has acquired an acid taste and will augment the internal Kapham of the body, and becomes positively injurious. Water boiled and subsequently cooled down should be given to a person suffering from any of the diseases due to an abuse of wine or to Pittam, or from a complaint brought about through the concerted action of the three deranged humours.

The water found inside the shell of a cocoanut is heavy,* demulcent, cool, pleasant and appetising etc. It is diuretic, (Vasti-shodhaka) spermatopoietic, and subdues Pittam and thirst. The use of water boiled and subsequently cooled down is recommended in dysentery, burning of the skin, hæmoptysis, diseases due to the abuse of wine, or to the effects of any imbibed poison, as well as in thirst, vomiting, catarrh, vertigo and loss of consciousness. Water should be taken as little as possible by a person suffering from any of the following diseases viz., loss of relish for food, catarrh, water-brash, œdema, any of the wasting diseases, impaired digestion, abdominal dropsy, cutaneous affection, fever, diseases affecting the eyes, ulcer and diabetes (Madhumeha, etc).

* Light according to Jejjada.

The Milk Group :—The milk of a cow, she-goat, she-camel, ewe, she-buffalo, mare, she-elephant, or of a woman, is what generally comes to the use of man.*

The milk is the white fluid essence of drugs and cereals, which enter into the food of the aforesaid milk-giving animals, and is therefore the best of all nutritive substances (literally life-giving). It is heavy, sweet, slimy, cold, glossy, emollient, laxative and mild.

Hence it proves congenial to all sentient animals. And since milk is kindred in its nature to the essential principles of life and so very congenial to the panzoism of all created animals, its use may be unreservedly recommended to all, and is not forbidden in diseases due to the deranged action of (Váyu) or Pittam, or in ailments affecting the mind (Mánsa), or the vascular system of man. Its beneficial and curative efficacy may be witnessed in cases of chronic fever, in cough, dyspnœa, phthisis and other wasting diseases, in Gulma (abdominal glands), insanity, ascites, epileptic fits, in vertigo, in delirium, in burning sensation of the body, in thirst, in diseases affecting the heart and the bladder, in chlorosis and dysentery, in piles, colic and obstinate constipation, in Grahani, Praváhika,

* From the construction of the present sentence in the original texts, we are warranted to include the milk of a doe, or of a she-mule, or of a cow-rhinoceros in the list, as they sometimes prove beneficial for external applications.

miscarriage and other diseases peculiar to the female reproductive organs, and in hæmoptysis. It is a refrigerant and acts as a bracing beverage after physical exercise. It is a sacred, constructive, tonic, spermatopoietic, rejuvenating and aphrodisiac. It expands the intellectual capacities of a man, brings about the adhesion of broken or fractured bones (Sandhána) rejuvenates used and exhausted frames, forms an excellent enemata, increases the duration of life, and acts as a vitaliser. It is an emetic and a purgative remedy, and imparts a healthy rotundity to the frame, and which through its kindred or similar properties augments the quality of bodily albumen (Ojah) and is the most complete and wholesome diet for infants, old men and persons suffering from cachexia witnessed in cases of ulcers in the chest, as well as for persons debilitated from insufficient food, sexual excesses or excessive, physical labour.

Metrical Texts:—**Cow-milk** is demulcent, and does not set up or increase the normal quantity of slimy secretions in the internal channels of the body. It is heavy and is a good elixir, and proves curative in hæmoptysis. It is cold, and sweet both in taste and chemical reaction. It subdues both Váyu and Pittam and is accordingly one of the most efficient of vitalising agents.

The milk of a she-goat is possessed of properties similar to those of a cow, and is specially beneficial to

persons suffering from phthisis.* It is light, astringent, appetising (Dipana), and is efficacious in dyspnœa, cough and hæmoptysis (Amlapitta—A. T.). The milk of a she-goat proves curative in all diseases owing to the smállness of her limbs and her agile habits, as well as for the fact of her drinking comparatively a less quantity of water and living upon bitter and pungent herbs. **The milk of a she-camel** is parchifying, heating, light, palatable and possessed of a little saline taste. It proves curative in œdema, abdominal glands, ascites, piles, intestinal worms and Kushtha, and is a good antitoxic agent. **The milk of a ewe** is sweet, demulcent, heavy and proves aggravating in disorders of Pittam and Kapham. It forms a good diet in Kevalaváta and in cough due to the deranged condition of the bodily Váyu.

The milk of a she-buffalo is sweet in taste, tends to impair digestion and increases the slimy secretion of the organs. It is heavy, soporific, cooling, and contains more fatty matter than cow's milk.

The **milk of** a she-animal with unbifurcated hoofs (**Ekashapha**) such as, the mare, etc., is tonic, light, parchifying, sweet and acid in taste, leaving a saline after-taste, and proving curative in cases of rheumatism restricted to the extremities.

* It has been recently discovered by a German physician that tuberculosis bacilli do no not thrive in goat's-blood—Translator.

The milk of a woman is cold and sweet, leaving an astringent after-taste. It proves beneficial as an errhine and acts as a good wash in eye diseases. It is wholesome, vitalising, light and appetising. **The milk of a she-elephant** is sweet though it leaves an astringent after-taste. It is spermatopoietic, heavy, demulcent, cooling and tonic. It invigorates the eyesight.

The milk of a she-animal, milched in the morning, is heavy, cold and takes a long time to be digested owing to her entire repose (literally want of physical exercise or locomotion) during the night, when cooling attributes preponderate. Similarly, the milk milched in the evening is found to be possessed of refrigerant and eye-invigorating properties. Moreover, it restores the bodily Váyu to its normal condition owing to the physical labour undergone by the animal in the day time, exposed to the rays of the sun and the currents of free air. Cold or unboiled milk is extremely heavy, and serves to increase the slimy secretions of the organs, whereas by boiling it is freed from those injurious traits. But this rule does not hold good in the case of woman's milk, which is wholesome in its natural or unboiled state. Freshly milched warm milk should be regarded as extremely wholesome, which, being cooled down, loses its efficacious virtues and becomes unwholesome. On the contrary, over-cooked milk is heavy and fat-making

(lit :—imparting stoutness to one's body). The milk, which emits a fetid smell, or has become discoloured and insipid, or has acquired an acid taste and looks shreddy and curdled, or tastes saline, should be regarded as unwholesome and injurious.

The Curd-group :—There are three kinds of curd such as, the sweet, the acid, and the extremely acid curd. Milk curd generally leaves an astringent after-taste. It is demulcent and heat-making in its potency, as well as spermatopoietic, vitalising and auspicious. It proves curative in Pinasa (nasal catarrh), intermittent fever (Vishama Jvara), dysentery, non-relish for food, difficult urination, and general cachexia.

Metrical Text :—**Sweet curd** greatly increases the slimy secretions of the organs and the quantity of fat and Kapham in the body. **Acid curd** deranges the Pittam and the Kapham, while the **extremely acid curd** vitiates the blood. Curd, which has been not perfectly curdled (**Mandajátam**) is acid in its (digestive) chemical reaction, acts as an inordinately strong purgative and diuretic agent, and deranges the three fundamental humours of the body.

Curdled cow's milk is demulcent, sweet in digestion, appetising, srength-increasing and acrid. It subdues the bodily Váyu and imparts a relish to one's food. Curd prepared with the milk of a she-goat is light,

and subdues the deranged Pittam and Kapham. It proves curative in Váta and wasting diseases, and is a good appetiser. Its beneficial effect is witnessed in cases of piles, dyspnœa and cough. Curd, prepared with the milk of a she-buffalo, is sweet in digestion, and spermtopoietic. It pacifies the deranged Váyu and Pittam, and serves to augment the normal quantity of bodily Kapham. It is specifically a demulcent substance. Curd prepared with the milk of a she-camel is pungent in digestion. It is found to be charged with alkali, and is heavy and a purgative. A continued use of curdled camel's milk proves curative in Váta, piles, cutaneous affections (Kushtha), worms in the intestines, and abdomimal dropsy. Curd prepared with the milk of a ewe proves aggravating in derangements of the Váyu and Kapham, as well as in cases of piles. It is sweet in taste and its chemical reaction increases the slimy secretions of the organs, and tends to derange the bodily humours. Curd, prepared with the milk of a mare, is appetising. It proves injurious to the eyes, and tends to augment the bodily Váyu. It is parchifying and hot in its potency, and is astringent in taste. It diminishes the secretions of stool and urine. Curd prepared with the milk of a woman is demulcent, sweet in digestion, tonic, pleasant, heavy, and specially beneficial to the eyes. It subdues the deranged humours and is specially efficacious in its virtues, and is the best

of all kinds of curd, and of all emollient remedies (Santarpanam). Curd prepared with the **milk of a she-elephant**, is light in digestion, subdues Kapham, and is heat-making in its potency. It impairs digestion, leaves an astringent after-taste and increases the quantity of fecal matter. Of all the preceding kinds of curd, the one prepared with cow's milk should be regarded as the best in virtue and quality. This curd well filtered through a piece of clean linen, imparts a relish to the food, whereas the curd, which had been prepared with boiled milk, should be deemed the most efficacious. The cloth-filtered curd subdues the deranged Váyu. It is demulcent and restorative, though it tends to increase the Kapham without bringing about a similar augmentation of the Pittam. The curd prepared with boiled milk subdues the deranged Váyu and Pittam, imparts a relish to the food, and acts as a good stomachic remedy. It increases the strength and the root principle of life. **The cream of curd** is heavy and spermatopoietic. It subdues the deranged Váyu, impairs digestion and is phlegmagogic and aphrodisiac. Curd made without cream is parchifying, astringent and arrests stool and urine (Vistambhi), It increases the bodily Váyu. It is appetising and is comparatively lighter, a little astringent in taste, and imparts a relish to food.

The use of curd is generally prohibited in (Vasanta)

spring, (Grishma) summer, and (Sharat) autumn, whereas it is recommended during the rains (Varshá) and in the forepart of winter (Hemanta), and in the cold season proper (Shishira). The residuary sediment of curd (Mastu) is frigorific and refrigerant, light and purifying to the internal channels of the body. It has a sweet and astringent taste and is anti-aphrodisiac. It destroys the deranged Váyu and Kapham, and is pleasant and palatable. It acts as a speedy purgative, and imparts strength to the system and relish to the food. In this group have been described the virtues of the seven kinds of curd such as, the sweet, the acid, the extremely acid, the curd of incomplete curdling, the curd of boiled milk, curd cream, and the creamless curd, as well as the residuary sediment (Mastu).

The Takra Group :—The Takra (whey) is sweet and acid in taste, and leaves an astringent after-taste. It is light, appetising and heat-making in its potency, and has a parchifying effect upon the organism. Its curative efficacy is witnessed in cases of chemical or combinative poisoning, œdema, dysentery, diarrhœa, jaundice, piles, enlarged spleen, abdominal glands, non-relish for food, intermittent fever, thirst, vomiting, water-brash, colic and obesity. It subdues the deranged Váyu and Kapham, and is non-aphrodisiac. It is sweet in its digestive reaction and pleasant to the system. It

proves curative in difficult urination, and in diseases due to the abuse of emollient medicinal remedies and applications.

Metrical Texts :—A compound made of equal parts of curd and water and subsequently churned so as to have the **contained** cream or butter completely skimmed off, and which is neither too thick nor too thin, is called Takram. It possesses a taste blended of the sweet, acid and astringent. Waterless curd, churned with the entire butter or creamy substance inherent in it, is called Gholam (a kind of whey). The use of Takram is prohibited in the hot season, nor should it be given to a weak person, nor to one suffering from an ulcer, or laid up with an attack of hæmoptysis, or to one suffering from epileptic fits, vertigo (Bhrama), or from a burning sensation in the body. The use of Takram is recommended during the cold months of the year, as well as to persons suffering from diseases due to the action of the deranged Kapham, or from suppression of stool or urine, etc., or from the effects of the deranged Váyu.

Again **sweetened Takram** soothes the deranged Pittam and aggravates the Kapham. **Acid Takram** subdues the Váyu and produces Pittam.

Metrical Texts :—In a case of deranged or disordered Váyu, acid Takram should be drunk mixed with rock-salt, and with sugar in disorders of the Pittam,

while in a case of deranged Kapham it should be mixed with Yavakshára and the powders of the drugs known as Vyosha. **Takrakurchiká** (Inspissated milk) is astringent (Gráhi), parchifying and hard to digest. It produces Váyu. The **Manda** or the residuary sediment of a compound made of the aforesaid Kurchiká and Dadhi Takram (curd-whey) is lighter than whey. **Kiláta*** is heavy, hypnotic, spermatopoietic and subdues Váyu. Similarly, **Moratha**† and **Piyusha**‡ are sweet to the taste and restorative and aphrodisiac in their properties.

Fresh **butter** (Navanita) is an albuminous substance, and is light, sweet, cooling, demulcent, pleasant, appetising, slightly acid and astringent. It subdues the deranged Váyu and Pittam. It is spermatopoietic, antacid in its reaction, and conduces to the improvement of one's memory and intellectual capacities. It proves beneficial in cases of consumption, cough, dyspnœa, ulcer, piles and facial paralysis.

Butter (of a few days standing) is heavy. It increases the quantity of fat and Kapham, and imparts strength and rotundity to the body, and proves especially wholesome to children. Butter made of thickened milk is the best of all oily or (Kshira) substances. It

* Boiled milk curdled and subsequently heated and made into a paste is called Kiláta.

† The milk of a cow recently delivered of a calf is called Piyusha till the seventh day after its birth, while it is subsequently called Moratha till it is perfectly purified and becomes fit for the use of man.

is sweet, cooling and astringent ; and imparts softness to the body, improves the eye-sight, and proves curative in hæmoptysis and eye-diseases.

Cream subdues the deranged Váyu. It is a pleasing (Tarpani) tonic, is spermatopoietic, demulcent, palatable, heavy and sweet in taste and digestion, and proves remedial to hæmoptysis.

Metrical Texts :—The virtues and properties of these modifications of curdled cow-milk have been described in detail since it is the best of all kinds of milk described before. The virtues and properties of similar preparations made from the milk of other animals should be regarded as identical with those of the milk of the animal out of which they have been prepared.

Clarified Butter (Ghritam) :—Ghritam or clarified butter is Saumya or cooling in its essence and potency, and is mild and sweet. It slightly increases the slimy secretions of the organs, and acts as a lubricating moistener, proving efficacious in Udávarta insanity, epilepsy, colic, fever (chronic) and distention of the abdomen from the suppression of stool and urine (Ánáha). It is appetising and subdues the Váyu and the Pittam. It improves memory, intelligence, complexion, voice, personal beauty, amiability of features and the principle of strength (albumen, Ojas) in the body.

It is vitalising, rejuvenating, spermatopoietic and heavy. It improves the eyesight, increases the quantity of bodily Kapham and the duration of life. It is sacred and is regarded as an appeaser of adverse fate. It eliminates poison from the body and wards off the invasions of monsters and demons.

Metrical Texts:—**Clarified butter** made of **cow** milk is sweet in digestion, and cool in its potency. It subdues the deranged Váyu and Pittam, and serves to eliminate poison from the system. It improves the eyesight and possesses excellent tonic and invigorating properties. Cow-butter, in its clarified state, is the best of all kinds of butter. **Clarified butter** made of the milk of a **she-goat** is appetising (Dipanam), eye-invigorating and strength-increasing. It proves a wholesome diet in cases of cough, dyspnœa and consumption (any wasting disease), and is light in digestion. **Clarified butter** prepared with the **milk of a she-buffalo** is sweet, heavy in digestion, and proves remedial in hæmoptysis. It is cooling and increases the quantity of bodily Kapham, and subdues the deranged Váyu and Pittam. **Clarified butter** made with the **milk of a she-camel** is anti-toxic, appetising and pungent in digestion. It subdues the deranged Váyu and Kapham, and proves curative in œdema, worms in the intestines, cutaneous affections, abdominal glands, and ascites. **Clarified butter** made with the **milk of a ewe** is light in

digestion. It does not enrage Pittam, and proves beneficial in cases of rigour, phthisis (Shosha) and in diseases due to the action of the deranged Váyu and Kapham, as well as in those which affect the female organs of generation. **Clarified butter** made with the milk of a **mare** (lit :—any female mammal with unbifurcated hoops) is light in digestion, heat-making in its potency, and astringent in taste. It is appetising, anuretic, and subdues the action of the deranged Kapham.

Clarified butter made with the **milk** of a woman is possessed of eye-invigorating virtues, and should be regarded as the prototype of divine ambrosia on earth. It is light (in digestion), anti-toxic, stomachic, and constructive. **Clarified butter** prepared with the milk of a **she-elephant** is astringent in taste, and brings about a suppression of stool and urine. It is bitter, light, and stomachic (Agnikara), and proves curative in cutaneous affections (Kushtha), poisoning, worms in the intestines, and derangements of the Kapham.

Butter churned out of thickened milk and clarified (**Kshira Ghritam**) is astringent, and proves beneficial in eye-diseases, hæmoptysis, epileptic fits, and vertigo.

The condensed upper stratum of clarified butter (**Ghrita-manda**) acts as a laxative, cures aching pain in the vagina, ears, eyes, or in the head,

and is recommended to be used as an errhine, an enema or as eye-drops.

Old clarified butter is laxative and pungent in digestion. It subdues the three deranged bodily humours, and proves curative in epileptic fits, obesity, insanity, abdominal dropsy, fever, chemical poisoning, œdema, hysteria, and in aching pain in the vagina, ears, eyes or head. It is appetising and is recommended to be used as eye-drops and enema, and for sternutatory purposes.

Authoritative verses on the subject:—Old or matured clarified butter proves curative in Timira (Gutta Serena), dyspnœa, catarrh, fever, cough, epileptic fits, and Kushtam, in cases of poisoning, mental aberration, and hysteria ascribed to the influence of malignant planets. Clarified butter matured from eleven to a hundred years is called the **Kumbha Gritam** (Pitcher clarified butter), while that, which is older than the one of the preceding kind, is called the **Mahá Ghritam** (the great clarified butter). **Kumbha Ghritam** is said to be possessed of the mystic potency of warding off the invasions of monsters, while the **Mahá Ghritam** is highly efficacious, sacred, and specifically curative in the disease known as Timira. It acts as a prophylactic against the malignant influences of all evil spirits and baneful planets, and should be taken

by men in whom Váyu predominates. It subdues the deranged Kapham, and improves the strength and intellect.

The Oil Group :--Oils, which belong to the category of fiery (Ágneya) substances, are hot or heat-making in their potencies, irritating, and sweet in taste and digestion, and are constructive (Vrinhanam), and pleasant. They expand through the entire system immediately after being drunk or rubbed (Vyaváyi), and are subtile, clear, heavy, and laxative (Sara). They tend to expand the bone-joints and contribute to their free and easy movements (Vikási). They act as spermatopoietics (Vrishyam), and purify the skin, improve the memory, and impart softness to the skin and complexion. They are flesh-making and strength-imparting, and increase the firmness of the body. They are possessed of eye-invigorating virtues, and are anuretic, liquefacient (Lekhana), bitter and stomachic (Páchana). They cure Váyu and Kapham. They are vermifuge and produce a slight Pittam, leaving an astringent after-taste. They relieve aching pain in the head, ears, and the female organs of generation (Yoni), act as purifying agents in respect of the uterus, and prove curative in urticaria.

The use of sesamum oil is recommended in cases of cut, cleft, punctured, severed, lacerated, blistered, thrashed or contused wounds and ulcers, and in burns

and scalds whether due to the application of heat or any vesicant alkaline solution, as well as in bites of wild beasts and birds, etc., and act beneficially in baths, unguents and lubrications.

Metrical Texts :—Oil should be used in snuffing, and as enematas (Vasti), eye-drops, ear-drops, as well as in seasoning soups, curries and cordials, etc. It pacifies the bodily Váyu.

Castor Oil is sweet, hot (in its potency), irritating and appetising. It leaves a pungent astringent after-taste, and is subtile. It acts as a cleansing agent in respect of the internal channels of the body, and is wholesome to the skin. It is spermatopoietic, sweet in digestion (Vipáka), and rejuvenating. It purifies the semen, vagina, and removes vaginal and uterine disorders, and contributes to the preservation of sound health. It improves the memory, complexion and intellect (of its user), subdues the bodily Váyu and Kapham, and cleanses the system from all injurions principles by inducing purging.

Oils obtained from the seeds of Nimba, Atasi, Mulaka, Jimutaka, Vrikshaka, Kritavedhana, Arka, Kampillaka, Hastikarna, Prilhviká, Pilu, Karanja, Ingudi, Shigru, Sarsapa, Suvarchalá, Vidanga or of Jyotishmati seeds, are irritating, light, non-heat-making in their potency, and pungent in taste and digestion. They act as a good laxative, and prove curative in diseases due to the

deranged Váyu, or Kapham, as well as in cases of Kushtha, Prameha, head disease, and intestinal parasites.

Metrical Texts :—**Kshauma** (Linseed) oil is sweet. It subdues the bodily Váyu and is strength-giving, and pungent in digestion. Devoid of any eye-invigorating properties, it is hot though demulcent, and heavy. It increases the Pittam.

Mustard oil is light, and acts as a vermifuge. It proves curative in itch and cutaneous affections, reduces Váyu, Kapham and fat, and is pungent, appetising and Lekhana (liquefacient). Oil obtained from the seeds of **Ingudi** is a vermifuge, and is light, and slightly bitter in taste. It proves curative in Kushtha and parasitic disorders, and affects the strength, semen and the eyesight of its user. The oil obtained from **Kushumbha** flowers is pungent in digestion and leads to the derangement of all the bodily humours. It is irritating, and acid in its reaction (Vidáhi). It is devoid of any eye-cleansing property and brings on hæmoptysis.

The Oils obtained from the Kiráta-tiktaka, Atimuktaka, Vibhitaka, Nárikela, Kola, Akshoda, Jivanti, Piyála, Karvudára, Surjavalli, Trapusa, Erváruka, Karkáru, and Kushmánda seeds, etc. are sweet in taste, potency and digestion, and tend to pacify the deranged Váyu and Pittam. Cooling in their potency, they increase the slimy secretions of the organs, impair digestion, and help the copious evacuation of stool and urine.

The Oils of the **Madhuka** (Maula), **Káshmarya**, and **Palásha** seeds are sweet and astringent. They pacify the deranged Kapham and Pittam. The oils of the **Tuvaraka** and **Bhallátaka** are heat-making, sweet and astringent, and leave a bitter after-taste. They prove curative in diseases due to the action of deranged Váyu and Kapham, as well as in obesity, Meha, cutaneous affections, and intestinal worms, and cleanse the system both by their emetic and purgative actions. The Oils obtained from the piths (Sára) of such trees as, **Sarala, Devadáru, Gandira, Shinshapá** and **Aguru**, are bitter, pungent and astringent in their tastes, and act as purifying agents in respect of bad ulcers. They prove curative in skin diseases and destroy the deranged Váyu, Kapham, and intestinal worms. The Oils obtained from the seeds of **Tumvi, Koshámra, Danti, Dravanti, Shyámá, Saptalá, Niliká, Kampillaka**, and **Shankhini**, are bitter, pungent and astringent in their tastes. They serve to cleanse the system from all impurities and baneful principles through their purgative properties. They act as purifying agents in respect of malignant ulcers, and prove curative in diseases due to the deranged Váyu and Kapham, as well as in skin-diseases (Kushtha), and parasitic complaints. **Yavatikata-oil** tends to subdue all the deranged humours, is slightly bitter, and acts as a good elixir. It is appetising, acid, and liquefacient. It is holy and wholesome (Pathyam), and serves to improve the memory of its user. The

Oil from **Ekaishiká** seeds is sweet, and extremely cooling. It subdues the Pittam, increases the Kapham and aggravates the Váyu. The Oil of the seeds of **mango** stones is slightly bitter in taste, and extremely aromatic. It subdues the Váyu and Kapham. It is parchifying, sweet and astringent, palatable, and not highly Pittam-making.

Metrical Texts:—The therapeutic properties of the oils from the seeds of fruits, which have not been specifically described in the present chapter, should be considered as identical with those of the fruits or seeds of which they have been so pressed out. All the vegetable oils (Sneha) described above should be regarded as possessed of the virtue of subduing the bodily Váyu, and they possess some of the properties, which specifically belong to **sesamum oil. Sesamum oil** is the most commendable of all oils inasmuch as the very word, which signifies oil (Táilam), is etymologically derived from Tilam (sesamum).

The oil, myosin (Vasá), fat, marrow, and Ghritam obtained from animals, which live in villages (Grámya), or frequent the marshy swamps (Anupa), or are aquatic (Audoka) in their habits, are heavy, heat-making in their potency, and sweet in taste. They subdue the bodily Váyu, while those obtained from Jángala (such as deer, etc.) or carnivorous animals, or from those possessed of unbifurcated hoofs, are light, cool in their

potency, astringent in taste, and prove curative in cases of hæmoptysis. The fat, marrow, etc. of animals of the Pratuda and Vishkira species (doves, pigeons, etc.) reduce the bodily Kapham. Of clarified butter, oil, myosin (Vasá), fat and marrow of animals each is heavier in digestion, and possesses a greater power of subduing the bodily Váyu than the one immediately preceding it in the order of enumeration.

The Honey Group :—Honey is sweet, and leaves an astringent after-taste. It is parchifying, cold, stomachic, cosmetic, tonic, light, softening, palatable, liquefacient (Lekhanan), and fermenting (Sandhánam). It acts as a purifying and healing agent in respect of ulcers and eyes, is aphrodisiac, astringent, and tends to permeate all the minutest channels and capillaries of the organism. It is antifat and pacifies the deranged Pittam and Kapham, and proves curative in hiccough, Meha, dyspnœa, cough, dysentery, vomiting and thirst. It is a vermifuge, antitoxic and demulcent, and influences the subduing of the three deranged humours. Owing to its lightness it subdues the deranged Kapham, and proves a good antidote to the deranged Váyu and Pittam owing to its sliminess, sweetness and astringent taste.

Metrical Texts :—Eight different kinds of honey are commonly used such as, the Pauttikam, Bhrámaram, Kshaudram, Mákshikam, Chhátram,

Árghyam, Auddálakam and Dálam.* Of these the honey obtained from the hives of bees, known as the **Puttikas**, is hot and parchifying owing to their habit of sucking the juice or sap of flowers and plants without eliminating therefrom other foreign or poisonous matter, that might have become naturally or accidentally mixed with it. This kind of honey is intoxicating and acid in its re-action, and tends to aggravate the Váyu, blood and Pittam. It acts as a liquefacient or discutient agent. Honey, known as the **Bhrámaram**, is extremely heavy owing to its extremely sweet taste and slimy character, while the one known as the **Kshaudram** is extremely cool, light and liquefacient. Honey known as the **Mákshikam** is lighter, dryer and more efficacious than the honey of the preceding class (Kshaudram), and proves specially beneficial in cases of dyspnœa, etc. Honey, known as the **Chhátram**, is

* (1) The kind of honey obtained from hives of large, yellow bees, is called the Pauttikam.

(2) The kind of honey obtained from hives of bees of the Bhramara species is called Bhrámaram.

(3) The kind of honey obtained from hives of small, tawny brown bees is called the Kshaudram.

(4) The kind of honey obtained from the hives of large, brown bees of the Makshiká species is called Mákshikam.

(5) The kind of honey obtained from the umbrella shaped hives of bees of the Chhatra species is called Chhátram.

(6) The honey obtained from the hives of thin-mouthed bees of the Argha species often found in ant-hills is called Árghyam.

(7) The kind of honey obtained from the hives of small brown bees of the Uddálakam species is called Auddálakam.

(8) The kind of honey found accumulated in leaves of honey-bearing plants is called Dálam.

sweet in digestion, heavy, cooling and slimy. It acts as a vermifuge, proves curative in hæmoptysis, psoriasis and Meha, and is possessed of a high efficacy. Honey known as the **Árghyam** is possessed of properties highly beneficial to the eye. It is a greater subduer of Pittam and Kapham than any other kind of honey, is astringent in taste, and pungent in digestion. It is a bitter tonic and does not generate Váyu in the system. Honey known as the **Auddálakam** improves the voice and relish for food. It is antitoxic, and proves curative in cutaneous affections. It is heat-making in its potency, and acid and astringent in taste. It generates Pittam, and is pungent in digestion. Honey, known as the Dálam, is parchifying and proves beneficial in cases of vomiting and Meha. Fresh honey is constructive and aphrodisiac, acts as a mild laxative, and to a small extent subdues the deranged Kapham. Old honey is astringent and liquefacient, and reduces fat and obesity. Honey, that has attained a thickened or condensed state in course of time (Pakka Madhu), tends to subdue the three deranged humours, while thin and immatured honey (Áma Madhu) is possessed of contrary properties, and tends to agitate the three fundamental humours of the body. In conjunction with many other drugs and medicinal remedies, honey proves curative in various diseases, and partakes of the virtues of the drugs or substances with which it is so used (Yoga-Váhika).

Honey is not collected from the flowers of any particular species. On the other hand, the honey-making bees cull it from the sap and juice of flowers and plants, which are incompatible with one another in respect of their nature, taste, virtue, potency and re-actionary (chemical) effect. For these reasons, and further from the fact of it being prepared by poisonous bees, honey becomes positively injurious after contact with heat or fire, and accordingly the use of hot or boiled honey is forbidden.

Metrical Texts :—On account of its poisonous contact in its origin honey exerts a similar injurious virtue. Used in a boiling or heated state, or in a hot country, or during the hot season of the year, or in a heated state of the body, honey is sure to prove fatal like poison. Honey is specially made injurious by hot contact owing to its placidity and coolness, and further for the reason of its being collected from the sap of a variety of flowers and plants. Atmospheric water (rain-water), like heat, serves to impart an injurious character to all kinds of honey (except the one known as the Árghyam Madhu).

Metrical Texts :—For emetic purposes honey may be administered with any other hot substance, inasmuch as it is intended in such a case that the imbibed honey, instead of being retained or

digested in the stomach, should be ejected immediately after its use.*

Undigested honey is more painful, or gives rise to a greater discomfort than all other undigested substances in the stomach, more so because internal fermentation and use of hot water, which are usually resorted to in a case of deranged digestion, can not be used in a case of undigested honey retained in the stomach, owing to the poisonous nature of the chemical change (Vipáka) it undergoes therein in contact with hot substances in general. Hence, undigested honey is as fatal as any poison.

The Sugar-cane group :—Sugar-cane is sweet in taste and digestion, heavy, cool, demulcent, strength-giving, spermatopoietic, and diuretic. It produces Kapham in the body, and proves remedial in hæmoptysis, and helps the germination of worms in the intestines.

Metrical text :—There are many species of sugar-cane such as, the Paundraka, Bhiruka, Vanshaka, Shataporaka, Kántara, Tápasekshu, Kástekshu, Suchipatraka, Naipalá, Dirghapatraka, Nilapora, and Koshakrit. Now we shall deal with the specific

* Though the use of honey with hot substances is not forbidden in such cases, still many an experienced physician of the A'yurvedic school thinks it safe to refrain from its use, lest it might be retained in the stomach for a considerable time, or find out a downward outlet and pass off with the stool.

virtues of each of them. The Sugar-cane of the Paundraka and Bhiruka types is cooling, sweet, demulcent and constructive. It produces Kapham and is laxative without giving rise to imperfect gastric digestion. It is heavy and spermatopoietic. The Sugar-cane of the Vanshaka species is possessed of similar properties as the two foregoing ones, though a little alkaline in its constitution, while that of the Shatapora species is a little more heat-making than that of the preceding class, and is found to subdue the deranged Váyu. The Sugar-cane of the Kántara and Tápasa species is possessed of the same virtues as that of the Vanshaka class. The Sugar-cane of the Kástekshu species is identical in its properties with that of the aforesaid Vanshaka class, though it tends to agitate the bodily Váyu. The Sugar-cane of the Suchipatra, Nilapora, Naipala and Dirghpatra species produces Váyu in the system, and subdues the Kapham and Pittam. It is slightly astringent in taste and indigestible (gives rise to acidity after digestion). The Sugar-cane of the Koshakara species is heavy (in digestion), cooling and proves curative in cases of hæmoptysis and wasting diseases in general. Sugar-cane is extremely sweet about the roots, sweet at the middle, and saline at the tops and joints.

The juice of a sugar-cane when eaten raw is not marked by any acid reaction after digestion. It is

spermatopoietic, and subdues the Váyu and the Kapham, and is pleasant to the taste. The juice of sugar-cane otherwise pressed out is heavy in digestion, is long retained in the stomach, and is followed by reactionary acidity, and arrests the evacuation of stool and urine. The juice of ripe sugar-cane is heavy in digestion, possessed of laxative properties, keen, and demulcent. It subdues the Váyu and Kapham. The inspissated or half boiled juice of sugar-cane (**Phánitam**) is sweet in taste and heavy. It increases the slimy secretions of the organs, acts as a flesh-builder, and is devoid of all spermatopoietic properties. It brings about a simultaneous derangement of the three bodily humours.

Common treacle is found to be charged with a little alkali. It is sweet in taste and not too cooling. It acts as a demulcent and purifier of the blood and urine. It subdues the deranged Váyu and, to a slight extent, deranges the Pittam as well. It increases fat, Kapham, and corpulency, and is possessed of tonic and spermatopoietic properties. White and purified (Shuddha) treacle is sweet in taste, and purifies the blood. It subdues the deranged Váyu and Kapham, and is one of the most wholesome diets for man. Its efficacy increases with its years.

The different modifications of treacle such as, the Matsandiká, Khamda, and Sharkara (sugar) which are progressivly more refined, should be deemed as gaining

more in their cooling, demulcent and aphrodisiac properties, and getting heavier in digestion in each of the successive stages of refinement. They are successively more frigorific, and beneficial in cases of hæmoptysis.

Metrical Texts :—To the properties considered as specially belonging to each of these modifications of treacle should be attributed its power of producing its own refinement and efficacy. The virtues of sugar such as, laxativeness, etc., should be regarded as proportional to its refinement, freedom from alkaline saturation, and the actual quantity of sweetening matter (lit. substance) contained in it.

Sugar prepared from concentrated honey (**Madhu Sharkará**) is parchifying and liquefacient. It proves beneficial in cases of vomiting and dysentery, is pleasant, has a sweet and astringent taste, and is sweet in digestion. Sugar prepared from a decoction of **Yavása Sharkará** (Durálabha) has a sweet and astringent taste, leaves a bitter after-taste, and is possessed of laxative properties, and subdues the deranged Kapham. All kinds of sugar tend to assuage burning sensations in the body, and prove curative in hœmoptysis, vomiting, epileptic fits, and thirst. The sweet and concentrated extract (Phánitam) of Modhuka flowers should be regarded as parchifying. It produces Váyu and Pittam, and subdues Kapham. It is sweet, astringent in its digestive transformation, and deranges the blood.

Madya Varga (Wines and spirits):— All species of wine are acid in taste, and appetising. They generate Pittam, and impart a greater relish to one's food. They act as mild purgatives, subdue the deranged Váyu and Kapham, and are pleasing, exhilarating and diuretic.

They are light in digestion and give rise to a kind of re-actionary acidity. They are keen and heat-making, stimulate the sense organs, expand the joints and increase the discharge of urine and stool. Now hear me specifically describe the properties of each kind of wine.

Metrical Texts :—The wine know[illegible]s the **Madvirkam** and [illegible]epared [illegible]n the ju[illegible] [illegible]uits as grapes and raisins, does not gi[illegible]se to any sort of reactionary acidity after its use, and accordingly is not forbidden by learned physicians even in cases of hæmoptysis. It has a sweet taste, and leaves an astringent after-taste. It is parchifying, light and easy of digestion, acts as an aperient, and proves curative in chronic fevers, phthisis and other wasting diseases.

The wine prepared from the juice of the date palm **(Khárjuram)** possesses properties, which are slightly different from those of the preceding kind. It tends to enrage the bodily Váyu, is clear, and imparts a relish to one's food, and reduces fat and Kapham. It is light,

has a sweet and astringent taste, is pleasing and aromatic and increases the agility of the limbs and organs.

The wine known as the **Surá** (made of rice-paste and other fermenting drugs) proves curative in cough, piles, chronic indigestion and diarrhœa, and retention of urine. It subdues the deranged Váyu and is tonic and appetising. It purifies the breast milk of a woman and proves beneficial in all types of diseases of the blood, as well as in wasting diseases. White **Sura** is used with benefit in all cases of cough, piles, diarrhœa, dyspnœa and catarrh. It builds up new [illegible] tissues, and increases the quantity of blood. It is gala[illegible]guic in its effect, and increases the quantity of Kapham [illegible] the body. The wine known as the **Prasanná** (the cream or the limpid surface of Surá) may be taken with advantage in vomiting, non-relish for food, aching or colic pain at the sides or about the cardiac region, constipation, suppression of stool and urine or flatus, as well as in all cases of obstinate constipation and derangement of the bodily Váyu. The wine prepared from barley (**Yavasurá**) generates Pittam and tends to enrage the bodily Váyu. It is dry and slightly generates Kapham. The wine prepared from **Madhulika** (a kind of small barley) is heavy and generates Kapham in the body. It is long retained in the stomach, and arrests the

evacuation of stool and urine. The **Ahshiki** (wine prepared from the bark of Vibhitaka trees etc.) is parchifying, digestant, and slightly produces Kapham. It is possessed of aphrodisiac properties. The wine known as the **Kohala** brings on the simultaneous derangement of the three fundamental bodily humours, is pleasant to the taste, acts as a purgative (Bhedya) and is possessed of aphrodisiac properties. The wine known as the **Jagala** (the underlying dregs or residue of wine) is astringent and heat-making in its potency, and acts as a digestant. It is parchifying, and proves beneficial in cough, thirst and phthisis. It is pleasant to the taste, cures diarrhœa, distention of the stomach, piles and œdema. It forms and subdues the deranged Váyu as well. The wine known as the **Vakkasa** (and subse.) long undigested in the stomach owing from the juice [illegible]t [illegible]eing pithless. It is a good appetiser and tends to enrage the deranged Váyu, and acts as a purgative and diuretic (tonic.—A. T.) It is heavy and slightly intoxicating. The wine known as the **Guda Sidhu** (prepared with the boiled juice of sugar-cane and Dhátaki flowers, etc.) has a sweet and astringent taste, and acts as an appetiser and digestant. **Sugar wine** (Sharkará Sidhu) is sweet in its taste, increases one's relish for food, is appetising and diuretic. It subdues the deranged Váyu and is exhilarating, sweet in digestion, and increases the action (lit : rouses up) of the sense organs. The

wine known as the **Pakka Rasa Sidhu** is possessed of properties similar to the preceding kinds (Sharkará Sidhu). It improves the complexion and imparts strength to the system and relish to one's food. It is pleasant, laxative, appetising and proves beneficial in cases of Kapham and piles and reduces swellings. The wine known as the **Sheeta Rasika Sidhu** (prepared from the unboiled juice of Sugar-cane in contradistinction with the preceding kinds prepared from the boiled juice of sugar-cane), acts as an anti-epispastic, and a digestant and vocal tonic, proves curative in œdema and abdominal dropsy, improves the complexion, removes the suppression of flatus, urine and stool (Vivandha), and proves beneficial in cases of piles. The wine known as the **Akshika Sidhu** (prepared from a decoction of Vibhe wine with treacle etc. and improved with the the limpid su Dhátaki) proves beneficial in cases of ulcer and jaundice. It is light and astringent, and has a sweet and astringent taste. It subdues the deranged Pittam and purifies the blood. The wine known as the **Jámvava Sidhu** (wine prepared from the expressed juice of the Jambalin fruit, a decoction of coriander seeds, treacle and Dhátaki flowers, etc.) is anuretic, reduces the quantity of urine, has an astringent taste, and tends to enrage the bodily Váyu. The wine known as the **Surásava** (Ásava distilled with wine instead of with water) is keen, pleasant, and diuretic. It subdues the deranged

Váyu and Kapham, or the deranged Váyu alone, and is palatable, and possessed of a more durable intoxicating power. The wine known as the **Madhvásava wine** is light, tends to disintegrate the knotty accumulations or collections of phlegm (Chhedi), and proves curative in Meha (unhealthy discharges from the urethra), cutaneous affections, and poisoning (antitoxic). It has a taste blended of the sweet and the astringent, is keen and anti-epispastic, and does not generate an abnormal quantity of Váyu in the system. The wine known as the **Maireya** (prepared from the Paishtisura, treacle-made spirit and honey) is keen, and has a sweet and astringent taste. It is intoxicating, and proves curative in piles, Kapham and Gulma (abdominal glands). It is antifat and a vermifuge, and is heavy in digestion, and subdues the deranged Váyu. Wines prepared from the juice of **grapes or sugar-cane** (Ikshu or Dhrakshásava) are tonic and choleric. They subdue the deranged Pittam, and serve to improve the complexion. **Sidhu** (wine) prepared from the **Madhuka flowers** is parchifying, takes a long time to be digested, and is followed by an acid re-action. It improves the strength and digestive capacity, and has an astringent taste. It subdues the deranged Kapham, and serves to aggravate the Váyu and Pittam. Wines prepared from the distilled juice of bulbs or roots should be deemed as possessed of properties pertaining to them individually. **New wine** is heavy, bad smelling, insipid,

unpleasant, unpalatable, and tends to increase the slimy secretions of the organs. It enrages the deranged humours of the body, takes a long time to be digested, and is followed by an acid re-action. **Old Wine** is sweet-smelling, acts as an appetiser, and brings on a relish for food. It is pleasant and a vermifuge, and cleanses the internal channels of the organism. It is light and subdues the deranged Váyu and Kapham.

The species of wine known as the **Arishta** (fermented liquor) is highly efficacious owing to the concerted action of a variety of drugs entering into its composition. It proves curative in a large number of diseases, tends to subdue the deranged humours of the body, and is a good appetiser. It subdues the Váyu and Kapham and is laxative and not hostile to the Pittam. It proves beneficial in colicpain, distention of the stomach, abdominal dropsy, fever, enlarged spleen, indigestion and piles. **Ásava** wine prepared from the drugs known as the Pippali, etc. (Pippalyádi Ásava) proves curative in Gulma (abdominal glands) and diseases due to the deranged Kapham. The **Aristhas** of other therapeutic virtues will be specially described later on in chapters on Therapeutics (Chikitsitam). An experienced physician should prescribe the different species of wine such as, the Aristha, Ásava, Sidhu, etc., in different diseases in consideration of the therapeutic properties of drugs, which enter

into their composition, or with which they have been purified, and according as each of them would be indicated in practice.

The following kinds of wine should always be rejected viz., such as are thick, bad smelling, or insipid or full of worms, or heavy and acid in digestion, unpleasant, new, strong and heat-making in their potency, or which have been preserved in an improper vessel, or which have been prepared with a comparatively lesser number of ingredients or have been decanted over-night, or are extremely slimy or transparent, as well as the dregs of all kinds of wine.

The wine prepared from a comparatively lesser number of ingredients, or that which is slimy, heavy and takes a long time to be digested, should be deemed as an agitator of the bodily Kapham. The wine which is marked by a deep yellow colour is strong and hot, is only imperfectly digested and followed by a kind of acid re-action. It tends to aggravate the Pittam. The wine, which is frothy or putrified, heavy or insipid or is marked by the germination of worms in its body, or is decanted over-night, tends to enrage or agitate the bodily Váyu. The wine which is well-matured, and possessed of its characteristic taste, and the virtue of improving the appetite and bringing on a relish for food, and which subdues the Vayu and Kapham, and is mild, good, aromatic and exhilarating, should be re-

garded as the only wine fit for use. Wines may be divided into a variety of species according to their different tastes and strength. The potency of a wine promoted by the bodily heat of a man coursés upward through the arteries, and ultimately reaches the heart ; and thence, through its own subtility and expansiveness, permeates the entire organism and gradually attacks and overwhelms the organs of sense perception, dethrones the mind from her throne of reason, usurps the permanent seat of intellect, and thus brings on intoxication.* A man of phlegmatic temperament (Kapha-prakriti) can carry his wine well, and symptoms of intoxication usually appear later in him. A man of bilious temparament (Pitta Prakriti), under such circumstances, gets easily intoxicated, while the man whose temperament is marked by a predominance of Váyu is often found to be tipsy after his first cup. A man of a Sáttvika frame of mind exhibits under the influence of wine, a decided predilection for fine dress, jollity, and acts of purity and compassion. He sings, or reads, or evinces a strong desire for female company. A man of a Rájasika frame of mind becomes extremely melancholy or pugnacious in his cups, indulges in despondent reveries, and evinces suicidal tendencies ; while wine in a subject of a Támasika cast of mind exhibits the latent and innate

* These couplets emphatically prove that the framers of ancient Ayurveda were fully conversant with the circulation of the blood—Tr.

vileness of his soul. Such a person generally sleeps when intoxicated, falsely boasts of his own excellence, and evinces a desire for women with whom connection is forbidden by both social and canonical laws.

Fermented liquors known as the **Shukta** (treacle, honey, fermented rice gruel, and curd cream kept in a new and clean vessel underneath a bushel of paddy for three consecutive days) bring on an attack of hæmoptysis. They disintegrate the lumps or knots of accumulated Kapham, are digestant and prove curative in jaundice and diseases due to the derangement of Kapham. They are light and vermifugenous, and strong and heat making in their potency. They act as diuretic, are pleasant, and pungent in digestion. Bulbs and roots pickled in Shukta acquire the properties of the latter. Of the Shuktas prepared with treacle, juice of sugar-cane, or honey, each preceding one should be deemed heavier and as giving rise to greater secretions of internal organs than the one immediately following it in the order of enumeration.

The different kinds of fermented rice gruel known as the **Tushámvu and Sauvira** are pleasant and appetising beverages. They prove efficacious in cases of jaundice, worms in the intestines, dysentery, piles, and in diseases affecting the heart. They are possessed of purgative (Bhedi) properties.

The fermented gruel known as the **Dhányámlam** is a good appetiser (tonic—D. R) owing to the fact

of its being a preparation of paddy. As a plaster, it alleviates the burning sensation of the skin, and as a potion it subdues the Váyu and Kapham, and allays thirst. Used as a gargle it forms one of the best remedies for reducing Kapham owing to its keenness. It is light of digestion, acts as a deodorant, removes the sense of exhaustion and bad taste from the mouth, allays thirst, acts as a good appetiser and dissolvent, is possessed of purgative virtues, and is advantageously used as an enemata (Ásthápanam). It is very wholesome to sea-faring men.

The Urine Group :—The urine of cows, buffaloes, goats, sheep, mules, horses, and camels* are commonly hot and bitter, and leave a saline after-taste. They are light and are used as purifying agents, and will prove curative in diseases due to the derangement of the Váyu or Kapham, as well as in worms in the intestines, obesity, poisoning, abdominal glands, piles, ascites, cutaneous affections, œdema, non-relish for food, and jaundice. In general they act as cardiac stimulants (Hridyam) and appetisers.

Authoritative verses on the Subject :—They are all pungent, strong, hot, light and have a saline after-taste. They act as blood-purifiers or disinfecting agents, reduce corpulency, act as vermi-

* The urine of a cow, she-buffalo, ewe and she-goat should be taken and used, while similar secretions of the male should be taken where man, camel and elephant should be indicated.

fuges and are anti-toxic. They subdue the deranged Váyu and Kapham. They prove beneficial in cases of piles, ascites, abdominal tumours, œdema and non-relish for food. They prove beneficial in jaundice, and act as cardiac stimulants, and are possessed of appetising, purgative and stomachic virtues.

The urine of a **cow** is pungent, strong and hot, and does not generate Váyu on account of its being saturated with alkali. It is light, stomachic, slightly generates the Pittam, and subdues the Váyu and Kapham. It proves beneficial in cases of colic, abdominal glands, ascites and distention of the abdomen, and is used for the purposes of purging and enematas (Ásthápanam). In cases, which prove amenable to the use of urine, the urine of a cow should be used to the exclusion of that of any other animal, even to that of an ox.

The urine of a (she) baffalo proves beneficial in piles, abdominal dropsy, colic, cutaneous affections, Meha, imperfect action of emetics or purgatives, constipation, œdema, abdominal glands, and jaundice.

The urine of a (she) **goat** has a pungent, bitter taste. It slighly agitates the bodily Váyu and proves curative in cases of cough, dyspnœa, consumption, jaundice and chlorosis. The urine of a **ewe** contains alkali, and has a bitter pungent taste. It subdues the deranged Váyu, and is heat-making in its potency. It proves beneficial in cough, enlarged spleen, abdomi-

nal dropsy, dyspnœa, consumption and in obstinate constipation of the bowels. The urine of a horse is appetising and pungent in taste, strong and heat-making in its potency. It subdues the deranged Váyu and Kapham, and cures mental aberrations. It is usually recommended in cases of ringworm and worms in the intestines. The urine of an elephant has a bitter and saline taste. It is keen and purgative, and subdues the Váyu and enrages the Pittam. It is commonly used in the treatment of (Kilása) leucoderma and in the preparation of alkalies.

The urine of an ass tends to neutralise the effects of poison generated through the chemical action of two different substances in the organism. It is strong and proves curative in cases of chronic dysentery. It is a vermifuge and subdues the Váyu and Kapham, and is appetising. The urine of a camel proves beneficial in cases of œdema, leprosy, abdominal dropsy, insanity, worms in the intestines, piles and in diseases due to the action of the deranged Váyu. Human urine is strong anti-toxic.

I have now briefly described the properties of all kinds of liquid food or drink. An experienced physician should prescribe them for the use of his king according to the nature of season and the country in which they are to be applied.

Thus ends the forty-fifth Chapter of the Sutrasthánam in the Sushruta Samhitá which treats of liquids.

CHAPTER XLVI.

Now we shall discourse on the Chapter which treats of food and drink **(Annapana-Vidhimadhyayam).**

Having made obeisance to the holy Dhanvantari, Sushruta said:—"You have stated before that food determines the origin of beings and forms the chief source of their bodily strength and complexion, as well as of the albuminous (Ojas) principle in their organisms. Food primarily depends upon the six different tastes. Moreover tastes are inherent in substances. Again the substances, with their specific tastes, virtues, potencies and reactionary or chemical transformations, tend to diminish or increase the deranged humours and the fundamental principles of the body, as also to bring about a normal equilibrium amongst them. Food is the primary cause of the origin, continuance and dissolution even of such beings as the divine Brahmá, etc. Life is impossible without food. Food is the source of the growth, strength, and healthful glow of organic beings. It is food that imparts strength to the organs of sense and makes them operative in their respective fields of action. It is irregularity (Vaishamya) of diet which brings about ill-health. Diet may be divided into four kinds such as,

solid food, (Ashitha) drink, Leedham (food taken by licking), and the Khấditam (food that is chewn and assimilated only for the enjoyment of a specific taste). A variety of substances enters into the composition of our food, which admit of being grouped under various preparations and necessarily involve the co-operation of a large number of dynamical forces. I am eager to learn of the substances and their specific inherent properties, virtues, potencies and transformations (chemical reactions) which constitute the daily food of human beings, inasmuch as a physician, who is ignorant of them, is quite helpless in checking or curing any distemper and maintaining health in individuals. And since food (diet) determines the origin of all created beings, instruct us, O Lord, on the proper regimen of food and drink."

The holy Dhanvantari, thus addressed by Sushruta, replied as follows :—"O child, hear me discourse on the proper regulation of food and drink as requested by you. There are several species of **Shấli rice** such as, the Lohitaka, Shấli, Kalama, Kardamaka, Pánduka, Sugandhaka, Shakunáhrita, Pushpándaka, Pundarika, Maháshấli, Shita-Bhiruka, Rodhra-Pushpaka, Dirghashuka, Kánchanaka, Mahisha-mastaka, Háyanaka, Dushaka, and Mahá-Dushaka etc.

Metrical Texts—The several species of Shấli rice are sweet in taste, cooling in potency,

light of digestion, and impart strength to those who use them. They subdue the Pittam and slightly generate Váyu and Kapham. They are demulcent and tend to constipate the bowels and reduce the quantity of fecal matter. Of these the red species (Lohitaka) is the most efficacious, and subdues the deranged humours. It is diuretic, spermatopoietic, refrigerant, eye-invigorating, cosmetic, tonic and pleasant. It improves the voice. Its efficacy has been witnessed in cases of fever and ulcer, and in all other diseases. It is a good disinfectant and anti-toxic. The other species differ a little in their properties from the preceding one and are successively inferior in quality in their order of enumeration.

Shashtika Group :—The several species of Shashtika, Kánguka, Mukundaka, Peetaka, Pramodaka, Kákalaka, Asana-Pushpaka, Mahá-Shashthika, Churnaka, Kuravaka, and the Kedaráka, etc.

Metrical Texts :—They (Shashtikas) are sweet in taste and digestion, and pacify the Váyu and the Kapham. Their properties are somewhat identical with those of Shâli rice inasmuch as they are constructive, tonic and spermatopoietic, and increase the Kapham. The Shashtika is pre-eminently the most efficacious of all the other species, and leaves an astringent after-taste in the mouth. It is light, mild, demulcent and imparts strength and firmness to the body. It is astringent and

sweet in digestion, and exhibits properties similar to those of the red Shāli. The remaining varieties are inferior in quality, each succeeding one being inferior to the one immediately following it.

Vrihi Dhānyas :—The several species of Vrihis are known as the Krishna-Vrihi, Shálamukha, Jatumukha, Nandimukha, Láválkshaka, Taritaka, Kukkutandaka, Párávataka, and the Pátala, etc.

Metrical Texts :—They have a sweet and astringent taste, are sweet of digestion and hot in their potencies. They tend to slightly increase the secretions of the internal organs and bring on constipation of the bowels. Their general properties are nearly identical with those of the aforesaid Shashtikas. The species Krishna-Vrihi is the best of them all. It is light, and leaves an astringent after taste, the remaining varieties gradually deteriorating in quality from the one under discussion.

Sháli rice, grown on burnt land, is light of digestion, has an astringent taste, is parchifying, tends to suppress the emission of urine and the evacuation of stool, and reduces the deranged Kapham. Sháli rice grown in a Jángala country has a taste slightly blended of the pungent, astringent, sweet and has a shade of bitter. It subdues the deranged Pittam and Kapham, (generates Váyu —D. R.) and is a good digestant and stomachic. Sháli rice grown in a Kaidára or marshy country has a

sweet taste with a shade of the astringent. It is tonic and spermatopoietic, aphrodisiac and heavy of digestion. It reduces the quantity of excrement, subdues the Pittam, and increases the Kapham.

Rice of once transplanted paddy plants (Ropya) or of those transplanted several times in succession (Atiropya) is light, easily digested and comparatively more efficacious. It acts as a constructive tonic and is not followed by any reactionary acidity after digestion. It destroys the deranged humours and is diuretic. Rice of paddy plants, sprouting from the stubbles of a previous harvest, is parchifying. It suppresses the evacuations of stool, has a bitter and astringent taste, subdues the Pittam, is easily digestible and generates Kapham. I have fully described the good and bad species of grain belonging to the Shāli group. Similarly, I shall speak of Kudhányas, Mudgas and Máshas, etc.

The Genus Kudhánya :—The several varieties of Kudhányam are known as the Koradushaka, Shyámáka, Nivára, Shántanu, Varaka, Uddálaka, Priyangu, Madhuliká, Nándimukhi, Kuravinda, Gavedhuka, Varuka, Todaparni, Mukundaka, and Venu-yava, etc.

Metrical Texts :—They generate heat and have a sweet and astringent taste. They are parchifying and pungent of digestion, subdue the Kapham and

tend to produce retention of the urine, and enrage the bodily Váyu and the Pittam. Of these the species known as the Kodrava, Nivára, Shyámáka and Shántanu have a sweet and astringent taste and prove curative in Sheeta pitta (urticaria). The four (black, red, yellow and white) varieties of Priyangus reduce the Kapham and produce a parched condition in the body, each preceding species being superior as regards its virtues to the one immediately following it in the order of enumeration. The species Madhulikás as well as the one known as the Nándimukhi is sweet, cool and demulcent. The species Varuka and Mukundaka are largely possessed of absorbing virtues. The species Venu-yava, is parchifying, and heat-making in its potency and is pungent of digestion, brings on retention of the urine, subdues the deranged Kapham, and tends to enrage the bodily Váyu. The several varieties of pulse (Vaidala) commonly used as food are known as the Mudga, Vana-Mudga, Kaláya, Makushtha, Masura, Mangalya, Chanaka, Satina, Triputa, Harenu, and Ádhaki, etc.

Metrical Texts:—They are generally cool and pungent of digestion, and have a sweet and astringent taste. They generate the Váyu, arrest the flow of urine and the evacuation of stool, and subdue the Pittam and Kapham. The species known as the Mudga does not excessively generate Váyu in the system but tends to purify and invigorate the

organ of vision. The green species is the best of all the varieties of Mudga pulse. The properties of Vanya (Mudga) are similar to those of the common variety.

The species of pulse known as Masura is sweet of digestion and constipates the bowels. The species **Makushthaka** is vermigenous, while the species **Kaláya** generates Váyu copiously. The species **Ádhaki** subdues the Pittam and Kapham, and does not excessively agitate the Váyu in the organism. The species known as the **Chanaka** generates Váyu and is cooling in its potency. It has a sweet and astringent taste, and produces a parched condition of the body. It subdues the Pittam and Kapham, corrects the deranged blood, and tends to bring on a loss of the virile powers. The species known as **Satina** and **Harenu** are astringent in their virtues and tend to constipate the bowels. All the varieties of pulse except the Mudga and the Masura tend to produce a distension of the abdomen caused by gas or air in the organism (Tympanites or Adhmána).

The pulse known as the **Másha** has a sweet taste, is heavy and pleasant, laxative, diuretic, demulcent, heat-making, aphrodisiac, and specifically spermatopoietic, tonic and galactogoguic. It subdues the Váyu and increases the Kapham. The species known as the **Alasándra** (Rájamásha) does not produce Kapham

and is neither laxative nor diuretic on account of its astringent nature. It is sweet in taste and of digestion, pleasant, glactogoguic and improves a relish for food. The properties of **Átmagupta** and **Kákánda** seeds are similar to those of the aforesaid Másha pulse. The species known as the **Áranya-másha** is astringent in taste, produces a condition of parchedness in the system, and is not followed by any reactionary acidity after being digested. The pulse known as **Kulattha** has an astringent taste, is pungent of digestion and is possessed of astringent properties. It proves curative in cases of urinary calculi arising from seminal derangement (Shukráshmari), abdominal glands, catarrh, and cough. The species known as the **Ványa-Kulattha** subdues the deranged Kapham, and proves curative in cases of Anáha, obesity, piles, hic-cough and dyspnœa. It may bring on an attack of hœmoptysis, and proves beneficial in diseases affecting the eyes. **Tilam** has a taste blended of the sweet and the bitter with a shade of the astringent. It is astrigent, heat-making, and produces Pittam. It is sweet of digestion, demulcent, tonic, and curative as a plaster for ulcers. It is benefiicial to the skin and teeth, improves the intellect and digestion, is anuretic and heavy, helps the growth of hair, and subdues the deranged Váyu.

Of all the different varieties of sesamum, the black species is the best in respect of efficacy. The white

species occupies a middle position as regards its virtues, while the remaining varieties should be regarded as of inferior quality.

Barley (Yava) is cooling, sweet and astringent in taste, and pungent of digestion. It subdues the deranged Pittam and Kapham. It is anuretic, beneficial to ulcers; and like sesamum, increases the quantity of stool and the emission of flatus, imparts firmness to the body and improves the voice, complexion and digestion. It is slimy and produces a condition of extreme parchedness in the system, removes obesity, and subdues fat. It subdues the deranged Váyu, is refrigerant and soothes (purifies) the blood and Pittam. The Atiyavas (a species of barley) is inferior to the barley species in respect of the preceding qualities.

Wheat is sweet, heavy, tonic, rejuvicient, spermatopoietic, and improves the relish for food. It is demulcent and extremely cooling, subdues the Váyu and Pittam, and generates the Kapham. New wheat is laxative and brings about the adhesion of fractured bones or helps fermentation (Sandhánakrit).

The Shimvas (Beans) have an astringent taste and produce a condition of parchedness in the system. They are antitoxic, discutient, and reduce the Kapham and the power of sight. They are imperfectly digested and acquire a pungent taste in digestion, though

ordinarily sweet in taste. They cause evacuation of the bowels and emission of flatus.

There are four variteies of Shimva such as, the white, the black, the yellow and the red, of which each preceding species is superior in virtues and qualities to the one immediately following it in the order of enumeration. The Shimvas are heat-making and pungent both in taste and digestion.

The two varieties of **Sahá**, as well as the species of beans known as the **Mulakashimvi** and the **Kushimvi**, are sweet in taste and digestion, and strength-giving. They tend to subdue the action of the deranged Pittam.

Raw and unripe pulse beans (Vaidálika Shimvi) produce a condition of extreme parchedness in the system, are long retained in the stomach and but imperfectly digested. They are relishing but can be digested only with the greatest difficulty, causing the stomach to distend before being digested.

Kusumbha seeds are pungent in taste and digestion, and reduce the deranged Kapham. They are extremely unwholesome, owing to the fact of their being imperfectly digested. **Linseed** (Atasi) has a sweet taste, is heat-making in its potency, and pungent in digestion. It generates the Pittam and subdues the Váyu. **White mustard** (Shveta Sarshapa) is

pungent in taste and digestion, strong and heat-making in its potency. It gives rise to a condition of parchedness in the system, and diminishes the Váyu and the Kapham. An excessive and continuous use of white mustard may bring on an attack of hæmoptysis. The properties of **red mustard** seeds are similar to those of the white species.

A crop of Dhányam grown in an unnatural season, or in any way diseased or blighted, or gleaned before it has ripened, as well as the one raised from a soil naturally uncongenial to its growth, or recently harvested, should be deemed to be of inferior quality.

The use of new (harvested within a year) rice tends to increase the secretions of the internal organs, while that of a year's maturity is light.*

Rice threshed out of paddy, which has commenced sprouting, is heavy, and is long retained in the stomach. It can be but imperfectly digested and tends to affect the organ of vision.

The maturity, preparations (Sanskara), and measures of corn from Sháli rice to mustard seeds described in the present Chapter are as follows :—[Rice of two years standing should be regarded as well matured in time and excellent in quality. A thing, which is hard to

* Rice of more than two years standing becomes divested of all its nutritive elements.

digest like Vrihi, is made light by frying. Measures for use should vary according to the keenness of one's appetite.]

The meat Group :—Now I shall describe the properties of the different species of edible meats. The flesh of animals such as those which are aquatic in their habits (Jaleshayá), or frequent marshy lands (Ánupa), or dwell in villages (Grámya), or are carnivorous in their habits (Kravyabhuja), or are possessed of unbifurcated hoofs (Ekashapha), or dwell on high ground (Jángala), is generally used as food. Of these each succeeding kind is superior to the one immediately preceding it in the order of enumeration.

Again these animals may be roughly grouped under two broad sub-heads such as, the **Jángala** (living in high ground and in a jungle) and the **Ánupa** (living in marshy places, or near pools and water-courses). The **Jángala** group may be further divided into eight sub-species, such as the **Janghála**, the **Viscira**, the **Pratuda**, the **Guháshaya**, the **Prasaha**, the **Parnamriga**, the **Vileshaya**, and the **Grámya**. Of these the Janghála and the Viscira are the most important. The following animals belong to the Janghála (large-kneed) group—viz. the Ena (black deer), the Harina (red deer), the Rishya (blue deer), the Kuranga (antelope), the Karála, the Kritamála, the Sharabha, the Shvadanstrá, the Prishata, the Chitrila (Spotted deer), the Chárushka,

the Mriga-mátriká, etc. These species of venison have a sweet and astringent taste, are light, keen, pleasant (palatable), laxative, and diuretic in their effect. They subdue the Váyu and the Pittam.

Metrical Text :—The venison of the Ena species is sweet and astringent in taste, and palatable, and proves curative in diseases due to the deranged condition of the Pittam, blood and Kapham. It is astringent in its effect, imparts strength to the system, improves a relish for food and is a febrifuge. The venison of the Harina (red) species is sweet in taste and digestion, appetising, aromatic, cool, light, and suppresses the discharge of stool and urine and pacifies the deranged humours. Deer which are black are called Ena, while those which are red are called Harina. Those, that are neither red nor black, are designated as Kuranga. The venison of the Mriga-mátriká species is cooling and proves curative in cases of hæmoptysis, Sannipáta diseases (due to the concerted action of the three deranged humours), consumption, dyspnœa, cough, and hiccough and creates a relish for food.

Birds such as the Láva, Tittiri, Kapinjala, Vartira, Vartiká, Vartaka, Naptriká, Vátika, Chakora, Kalavinka, Mayura, Krakara, Upachakra, Kukkuta, Sáranga, Shata-Patraka, Kutittiri, Kuruváhuka and Yavalaka belong to the Vishkira species. [They are so called

from the fact of their picking up their food after scattering it first with their bills and claws (Skr. kira, to scatter)]. The flesh of a bird of this group is light, cooling, sweet and astringent in taste and tends to pacify the deranged humours of the body.

The flesh of the Láva is light, has a sweet and astringent taste, is pungent of digestion, and possessed of astringent and appetising properties. It is highly efficacious in diseases due to the concerted humours of the body. The flesh of the **Tittirs** is slightly heavy, heat-making and sweet in taste. It is spermatopoietic, appetising and astringent. It improves the intellect and complexion, and subdues the three deranged humours. The flesh of the yellow (Gaura) Tittiri proves curative in hic-cough and dyspnœa, and subdues the deranged Váyu. The flesh of the **Kapinjala** is light and cooling, and proves curative in cases of hæmoptysis, and is recommended in diseases brought about through the deranged condition of the Kapham or Váyu (Manda-váta). The flesh of the **Krakara** or of the Upachakra is light, pleasant (palatable), spermatopoietic, and appetising. It subdues the Váyu and Pittam and improves the intellect. The flesh of the **Mayura** is astringent and saline in taste, and is beneficial to the skin, helps the growth of hair, improves the voice,

intellect, appetite and relish for food, and imparts strength and vigour to the organs of sight and hearing.

The flesh of a **wild cock** is demulcent, heat-making, and spermatopoietic. It acts as a diaphoretic, imparts tone to the voice and the organism, subdues the deranged Váyu, and is useful as a good constructive tonic. The flesh of a domesticated cock or fowl is possessed of properties similar to those of its wild prototype with the exception that it is heavy, and proves curative in rheumatism, consumption, vomiting and chronic (Vishama-Jvara) fever.

Birds such as the dove, pigeon Bhringarája, cuckoo, Koyashtica, Kulinga, the domestic Kulinga, Gokshada, Dindimánaka, Shatapatraka, Mátrinindaka, Bhedáshi, Shuka, Shάriká, Valguli, Girisha, Alahva, Dushaka, Sugrihi, Khanjaritaka, Hárita, Dátyuha, etc. belong to the group known as the Pratuda.

Metrical Texts :—The Pratudas live on fruit, and their flesh has a sweet and astringent taste. It generates Váyu and produces a parched condition in the organism. It is cooling in its potency and reduces the Pittam and Kapham. It suppresses the discharge of urine and reduces the quantity of stool. Of these the flesh of the **Bhedáshi** tends to vitiate the humours and to derange the three excrements of the body. The flesh of the **Kána Kapota** (wild dove) is heavy and has a palatable, saline and astringent

taste. It proves beneficial in hæmoptysis and is sweet of digestion. The flesh of the **Kulinga** is sweet, demulcent, and spermatopoietic, and increases the bodily Kapham. The flesh of the domesticated Kulinga is highly spermatopoietic, and proves curative in cases of hæmoptysis.

Animals such as the lion, tiger, wolf, hyena arboreal leopard (Vriksha dipi), cat, jackal, bear, and Mrigaervaruka (a jackal-shaped, deer-eating species of tiger) belong to the group of the Guháshayas (cave-dwelling mammals).

Metrical Texts :—The flesh of animals belonging to this family is sweet, heavy, demulcent and strength-giving. It subdues the deranged Váyu. It is heat-making in its potency, and proves beneficial in diseases affecting the eyes and anus.

The Prasaha Group :—Birds such as, the Káka, Kanka, Kurura, Chása, Bhása, Shashagháti, Uluka, Chilli, Shyena, Gridhra, etc. belong to the family of Prasahas (Carnivorous birds that suddenly dart on their prey).

Metrical Text :—The flesh of birds belonging to this group is identical in its virtues, potency, taste and digestive transformation with those of the aforesaid carnivorous mammals, such as the lion, etc., and is specially beneficial in cases of consumption and kindred wasting diseases.

The Parna-Mriga Group :—Animals such as the Madgu, the arboreal Musika, the Vriksha-Sháyika, Avakusha, Puti-ghása and the Vánara, etc. belong to the family of **Parna-Mrigas** (lit : tree-dwelling arboreal animals).

Metrical Texts :—The flesh of animals of this group is sweet, spermatopoietic and heavy of digestion. It is invigorating to the eyesight and beneficial in cases of consumption. It is laxative and diuretic and cures cough, pile and dyspnœa.

The Vileshaya Group :—Animals such as, the Shvávit, Shalyaka, Godhá, Shasha, Vrishadansha, Lopáka, Lomasha-Karna, Kadali, Mriga-Priyaka, Ajagara, Sarpa, Mushika, Nakula and Mahá-Vabhru belong to the group of Vileshaya (hole-dwellers).

Metrical Texts :—The general properties of the flesh of animals belonging to this species are to increase the consistency of stool and urine. They are heat-making in potency, sweet in digestion as those of the preceding group. They subdue the Váyu and generate the Pittam and Kapham. They are demulcent and beneficial in cough, dyspnœa and cachexia. The **flesh** of the Shasha is sweet and astringent in taste. It reduces the Pittam and Kapham and neither produces nor subdues the Váyu owing to its moderately cooling potency. The flesh of the **Godhá** is sweet of digestion and has a pungent, astringent taste.

It is tonic and constructive and pacifies the Váyu and Pittam. The flesh of the **Shalyaka** is tasteful, light of digestion, cooling in its potency and anti-toxic, and subdues the deranged Pittam. The flesh of the **Mriga-Priyaka** proves a wholesome diet in diseases due to the action of the deranged Váyu (Váyu-Roga), while that of the Ajagara is beneficial in piles.

The flesh of a Sarpa (a species other than those specifically described) is curative in piles and derangements of the Váyu. It is a vermifuge and anti-toxic (a neutraliser of chemical or resulting poisons). It invigorates the eye-sight, is appetising and sweet and improves the intellect. Of these the flesh of the Darvicara is appetising, pungent in digestion, sweet in taste, and extremely efficacious in eye diseases. It is laxative and diuretic, and subdues the deranged Váyu.

Domestic Animal Group :—Animals such as horses, mules, cows, bullocks, asses, camels, goats, sheep, and Medapuchhas (fat tailed or Turkish sheep) etc., belong to the group of domestic animals (Grámyas).

Metrical Texts :—The flesh of domestic animals is possessed of constructive, tonic and appetising properties, is sweet in taste and digestion. It destroys the deranged Váyu and produces the Kapham and Pittam. Of these the flesh of the goat is

moderately cooling in its potency, does not increase the secretions of the internal organs, is heavy and demulcent, subdues the Pittam and the Kapham, and is beneficial in nasal catarrh. The flesh of sheep (mutton) is constructive, tonic and heavy, and generates the Pittam and Kapham. The flesh of the Medapuchcha is aphrodisiac and has properties similar to those of mutton.

Beef is holy and refrigerant, proves curative in dyspnœa, catarrh, cough, chronic fever and in cases of a morbid craving for food (Atyagni), and destroys the deranged Váyu. The flesh of an animal with unbifurcated hoofs (Ekashapha such as, the horse and the mule etc.), has a slightly saline taste, and is possessed of properties similar to those of mutton. The flesh of an animal belonging to the Jángala group is said to increase the secretions of the internal organs.

The flesh of beasts or birds dwelling remote from a village or pool tends to slightly increase the secretions of the internal organs, while the flesh of an animal living in a village or near a reservoir of water, excessively increases that secretion.

The A'nupa Group :—Animals, which are generally found to frequent marshy places (Ánupas) may be divided into five groups, such as, the **Kulacharas** (frequenting the shores of pools and lakes), **Plavas**

(divers or swimmers), **Koshastha** (conchiferous aquatic animals such as, the molluscs etc.), the **Padinas** and the (piscatory) **Matsya.**

Of these, the elephant, the Gavaya, buffalo, Ruru (an animal of the deer species which casts its antlers and wanders roaming about in the forests in autumn) Chamara, Srimara (an animal of the Zebra species with green and red stripes), Rohita (red deer), boar, rhinoceros, Gokarna, Kálapuchchaka, together with the Nynku (a species of antlered deer) and the wild cow, etc., frequent the cool shores of swamps and lakes, and are accordingly included within the group of Kulacharas (shore-dwellers).

The Metrical Texts :—The flesh of an animal of this group is spermatopoietic and destroys the deranged Váyu and Kapham. It is sweet in taste and digestion, cooling, tonic, demulcent and diuretic, and increases the quantity of Kapham.

The flesh of the **Elephant** tends to produce a state of extreme parchedness in the system, and is liquefacient and heat-making in its potency. It vitiates the Pittam and has a palatable acid and saline taste, and destroys the Váyu and Kapham. The flesh of the **Gavaya** is demulcent and sweet in taste, and proves beneficial in cough and is sweet of digestion. It tends to increase sexual capacity. The flesh of the **Buffalo** is demulcent, heat-making (in its potency), sweet,

spermatopoietic, pleasant and heavy of digestion It increases strength and virility and imparts firmness to the tissues, and is hypnotic and galactagoguic. The flesh of the **Ruru** is slightly sweet and leaves an astringent after taste. It is heavy, spermatopoietic and pacifies the Váyu and Kapham.

Similarly, the flesh of the **Chamara** is demulcent, cures an attack of cough, is sweet in taste and digestion and subdues the deranged Váyu and Pittam. The flesh of the **Srimara** is heavy and spermatopoietic, leaves an astringent after-taste in the mouth and tends to subdue the deranged Váyu and Pittam. The flesh of the boar (**Baráha**) or common pig is constructive, tonic, spermatopoietic and diaphoretic, and imparts a greater strength to the system. It is heavy (as regards digestion), demulcent, cooling, refrigerant, and pleasant, and destroys the deranged Váyu. The flesh of the **rhinoceros** has an astringent taste, and is pleasing to one's departed manes in the shape of an oblation (Pitryam). It is sacred, imparts longevity, tends to suppress the discharge of urine, produces a condition of parchedness in the organism, and destroys the deranged Váyu and Kapham. The flesh of the **Gokarna** is sweet, demulcent, mild (soft), sweet in digestion and proves curative in cases of hæmoptysis, and generates Kapham in the system.

The Plava Group :—Birds such as the

Hansa, Sárasa, Krauncha, Chakraváka, Kurura (belong also to the Prasaha group) Kadámva, Kárandava, Jivan Jivaka, Vaka, Valáká, Pundarika, Plava, Sarárimukha, Nandimukha, Madgu, Utkrosha, Kácháksha, Mallikáksha, Shukláksha, Pushkarasháyiká, Konálaka, Amvukukkutiká, Megharáva and Shvetacharana etc. belong to the Plava family. These birds are found to move about in large flocks.

Metrical Text :—The flesh of any one of this family is cooling, demulcent, and spermatopoietic and destroys the deranged Váyu. It proves beneficial in cases of hæmoptysis, is sweet in taste and of digestion, and is possessed of laxative and diuretic properties. The flesh of the Hansa is heavy (of digestion), heat-making, sweet and demulcent. It tends to improve the voice and complexion, and imparts strength to the system. It is spermatopoietic, tissue-building and tonic, and proves curative in nervous diseases (Váta-Vikára).

The Conchiferous (Koshastha) Species :—Animals such as, the Shankha, Shankhanakha (a species of small bivalve molluscs), Shukti, Shambuka and Bhalluka, etc., belong to the Koshastha (conchiferous) group.

The Pádina Species :— Animals such as, the tortoise, alligator, crab, black crab, porpoise, etc., belong to this species.

Metrical Texts :—The flesh of animals of the Shankha and Kurma orders is sweet in taste and digestion, cooling in its potency, demulcent, and beneficial to stool and the Pittam. It destroys the deranged Váyu and produces Kapham. Of these, the species of black crab is strength-giving and heat-making in its potency, and tends to destroy the deranged Váyu. The white species is laxative and diuretic in its effect, and tends to bring about an adhesion of fractured bones (or produces fermentation). It destroys the Váyu and Pittam.

The Piscatory Order :—The piscatory group may be roughly divided into two broad subdivisions, such as the Marine and the River (fresh water) fish. The species such as the Rohita, Pathina, Pátalá, Rájiva, Varmi, Gomatsya, Krishna-Matsya, Vágunjára, Murala, Sahasra-danstra, etc., belong to the fresh water family.

Metrical Texts :—The fresh water (Nádeya) fish (river fish) are sweet in taste, heavy of digestion, bring on hæmoptysis and destroy the deranged Váyu. They are heat-making in their potencies, spermatopoietic and demulcent and tend to reduce the quantity of stool. Of these, the Rohita leaves an astringent after-taste, and destroys the deranged Váyu. This species lives on such aquatic plants and herbs as grow in fresh-water pools

and do not inordinately generate Pittam. The Páthinas produce Kapham and are spermátopoietic. They are carnivorous and somnolent in their habits, tend to vitiate the blood and the Pittam, and originate dermal affections. The species of fish known as the **Murala** is constructive, tonic, spermatopoietic and galactagoguic. Fish bred in tanks or ponds are palatable to the taste and demulcent in their effect, while those reared in large lakes are usually found to gain in strength and size, while the species reared in shallow water is weak and stunted.

The Samudra (Marine) Species :—The Timi, Timingila (a species of large whales) Kulisha, Páka matsya, Nirálaka, Nandi-Váralaka, Makara, Gargarka, Chandraka, Mahámina, and Rájiva etc., constitute the family of marine fish.

Metrical Texts :—Sea fish are heavy, demulcent, and sweet, and do not inordinately produce Pittam. They are heat-making (in their potency), and spermatopoietic and beneficial to the stool, and destroy Váyu and generate Kapham.

Sea fish are extremely strength-giving in their effect owing to the fact of their living on animal food. Fresh water fish are possessed of greater tissue-building properties than their marine kindred, while those which are found in wells and Chuntis

are said to be possessed of greater carminative (Vátaghna) virtues than the two preceding orders. Fish reared in tanks (Vápi) are superior to the two preceding species owing to their greater demulcent and palatable properties. River fish are heavy at the middle, owing to the fact of their moving about with the help of their head and tail, while those which are cultured in tanks and ponds (Sarah and Tadága) are specially light about their heads. Fish, which are found in hill streams or fountains, are extremely heavy about the parts a little below the region of their head, on account of their being confined within narrow limits and the consequent absence of any lengthy sweep. Fish reared in large tanks (Sarasi) are lighter in the foreparts of their body and heavy in their lower parts, as they put their entire pressure upon their breast at the time of swimming. Thus I have finished describing the specific properties of the flesh of animals that frequent swamps or marshy grounds and which increase the secretions of the internal organs of a person using them for food.

Dried or putrid flesh, as well as the flesh of a diseased, old, emaciated, poisoned, or snake-bitten animal, or of one of extremely tender years or struck with a poisoned dart or weapon, or of that which has fed on unnatural food, should be carefully avoided inasmuch as dried or putrid meat is

shorn of all its potency. The flesh of a diseased or snake-bitten animal would be found to be poisoned or vitiated in its properties; that of a wounded animal is affected, that of an old animal is enfeebled in its potency, and that of an extremely young animal is immature in its virtue and hence would prove positively injurious to the system.

Metrical Texts :—Dry meat is heavy, brings on catarrh and a non-relish for food. The flesh of an animal killed by poison is fatal. The flesh of an animal of tender years may produce vomiting. The flesh of an old animal produces cough and dyspnœa, while the use of that of a diseased animal may be attended with a simultaneous derangement of the three fundamental humours of the body. Putrid meat produces nausea, while the use of that of an enfeebled or emaciated animal tends to aggravate the Váyu.

Meat falling under a category other than those described above should be deemed as good and wholesome. The flesh of a female quadruped, or of a male bird, or of a small-bodied creature of a large-sized genus, and vice versa, is principally recommended to be used amongst quadrupeds, birds, and animals. Similarly the flesh of a small-sized creature amongst large-bodied ones of the same species should be preferred as food.

Now we shall discourse on the heavy or light character of flesh obtained from different parts of the body of an animal. Of the different fundamental principles of the body from the blood to the semen, each succeeding one is heavier than the one immediately preceding it in the order of ennumeration. Similarly, (of the different limbs or organs of a quartered animal such as), the thighs, the shoulders, the loins, the head, the legs, the fore-extremities, the waist, the back, the skin, the kidneys, the liver and the intestines, each succeeding one is respectively heavier than the one immediately preceding it in the order.

Metrical Texts :—The head is heavier than the shoulders ; the shoulders, than the waist ; and the waist, than the back. Similarly, the upper parts of the Sakthi (thighs) are heavier than their lower ends. Of the seven fundamental principles of the organism (such as the lymph chyle, blood, flesh, fat, bone, marrow, and semen) each succeeding one is heavier than the principle immediately preceding it in the order of enumeration. The trunks of all animals are heavy. The lower part of a female frame and the upper one of a male are respectively heavier [than their upper (fore) and lower (hind) parts.]

The head and breast of a bird are heavier than its other limbs. The trunk or the middle part of a bird is so equipoised as to facilitate the movements

of its pinions in flight. The flesh of a fruit-eating bird produces a state of extreme parchedness in the organism (of a person using it as food,) while that of a carnivorous one acts as a good constructive tonic. The flesh of a bird, which lives on fish, produces Pittam, while that of one, which lives on paddy (Dhánya), subdues the Váyu. Of the animals, that live in dry land or frequent marshy places, as well as of those which are domesticated, or are carnivorous in their habits, or are possessed of unbifurcated hoofs, or live by darting on their preys, or dwell in holes, or are possessed of long legs, or eat by pricking, or are in the habit of first scattering their food with their claws, the flesh of each preceding one is lighter and tends to give rise to a lesser secretion from the internal organs than the one immediately following it in the order of enumeration.

Of animals belonging to the same genus, the flesh of one, which attains to an abnormally large size, should be rejected as inferior in pith or substance, and heavy as regards digestion. The flesh about the region of the liver of all animals should be regarded as the very best in respect of its dietic properties, in absence whereof the flesh of a young animal not at all used up, or afflicted with any disease and just quartered that day, should be regarded as coming next best.

Authoritative verse on the subject :—The age, body, development of limbs, temperament, nature, sex, constitution, size and habit of an animal should be taken into consideration before determining whether its flesh is wholesome or not. The measure in which it may be used as food with decided advantage to the organism and to what extent it will purify or improve its virtues, should also be considered.

The Fruit Group (Phala-varga) :—Now we shall discourse (on the specific virtues) of fruits, such as the Dádima, Ámalaka, Kapittha, Vadara, Kola, Karkandhu, Sauvira, Shimvitikáphala, Mátulunga, Ámra, Ámrátaka, Karamarda, Piyála, Lakucha, Bhavya, Párávata, Vetraphala, Práchinámalaka, Tintidika, Nipa, Koshámra, Amliká, Náranga, and Jamvira, etc.

Metrical Texts :—(We may describe the general properties of fruits by saying that) they are acid in taste and heavy of digestion, heat-making in their potencies, (expectorant) of (Kapham), generate Pittam and subdue the Váyu. Of the fruits enumerated in the above list the Dádima leaves an astringent after-taste and does not generate the Pittam to an inordinate degree.* It acts as an appetiser, brings on

* Charaka and Bhattáraka Harishchandra exclude Dádima (pomegranate) from the list of Pittakara agents, while Jejjadácharya is of opinion that it neither generates nor subdues the Pittam.

flesh and a relish for food, is palatable to the taste, and tends to constipate the bowels by (imparting a greater consistency to the fecal matter). Dádimas may be classified into two distinct species according as they are sweet or acid to the taste. The sweet species subdues the three deranged bodily humours, while the acid one subdues the Váyu and Kapham. The fruit known as the **Ámalaka** has a taste blended of the sweet, pungent and astringent ones with a shade of the bitter. It is laxative, spermatopoietic and beneficial to the eye-sight, and is capable of subduing all the three deranged humours The Vátághna virtue of this fruit should be ascribed to its acid taste ; its power of subduing the Pittam, to its sweetness and coolness ; and its efficacy in subduing the Kapham, to its affecting the tongue as a dry astringent substance. This fruit is by far the best known fruit as possessing high therapeutic properties. The **Karkandhu**, like the **Kola** or the **Vadara**, generates the Kapham and Pittam in its unripe or immature stage, while in its ripe or matured stage it is sweet, demulcent, purgative and subdues the Váyu and Pittam. The fruit known as the **Sauvira** is possessed of properties similar to those of the Vadara ; moreover it is sweet, demulcent, and subdues the Váyu and Pittam. The **Shimvitika-fruit** is cooling, astringent and palatable and has an astringent taste. The **Kapittham** in its unripe stage produces hoarseness. It is astringent and subdues the Kapham and increases

the Váyu, while in its ripe stage it subdues the Váyu and Kapham, is heavy, and has a sweet and acid taste. The fruit known as the **Mátulunga** is light, acid, appetising, and pleasant. It proves beneficial in cough and asthma, brings on a relish for food, allays thirst and cleanses the throat. The **rind of a Mátulunga** is a bitter vermifuge and is difficult to digest ; it subdues the Váyu and Kapham. The layer of skin (lit. flesh), immediately underlying the rind of the Mátulunga, is palatable, cooling in its potency, demulcent and heavy of digestion, and also subdues the Váyu and Pittam. The membranous or cellular covering, which envelops its seeds, is light, stomachic, astringent and palatable. It produces Kapham and proves curative in cases of piles, abdominal glands (Gulma) and vomiting. The expressed juice of the Mátulunga is recommended to a person suffering from colic pain (gastralgia), indigestion, constipation of the bowels, impaired digestion as well as from disorders brought about through the deranged condition of the Váyu and Kapham, and more so in cases where the patient has lost all relish for food. An unripe Ámra, in its first stage of development, tends to generate the Váyu and Pittam, while one with closed pollen (Vaddha-keshara type) generates the Pittam. Ripe Ámra is pleasant, cosmetic, relishing and tonic, helps the formation of fresh blood, and leaves an astringent after-taste. It is sweet and heavy, is a tissue-builder and tends

to increase the formation of semen and also subdues the Váyu and Pittam. The **Ámrataka** (Hog-apple) is spermatopoietic, is surcharged with a kind of oily matter and tends to increase the Kapham in the system. The **Lakucha** tends to destroy the semen, is long retained in the stomach, and serves to derange the three fundamental humours of the body. The **Karamardakam** is relishing and acid in its taste, allays thirst, and generates the Kapham. The **Piyálam** is heavy, cooling and spermatopoietic. The **Bhavyam** is pleasant, tasteful, astringent, and acid in taste. It cleanses the mouth and subdues the Pittam and Kapham. It is astringent, heavy, cooling and is long retained in the stomach.

The fruit known as the **Párávatam** is sweet and relishing, and it destroys the Váyu and a voracious appetite. The **Nipa**, like the old Ámalaka fruits, tends to neutralise the effects of poisons originated through the chemical combination of incompatible substances in the organism. Unripe **Tintidika** (tamarind) subdues the Váyu, and tends to generate the Pittam and Kapham in the organism, while in its ripe state it is astringent, heat-making and stomachic. It destroys the Váyu and Kapham and restores a relish for food. The **Koshámra** is possessed of properties nearly identical with those of the Tamarind. The properties of a ripe **Amliká** fruit are the same as those of

the latter with the exception that it further acts as a purgative. The **Náranga** has a sweet and acid taste, is pleasant and refreshing, and gives a relish to food. It is heavy, difficult to digest and subdues the Váyu. The **Jamvira** tends to allay thirst and cures colic pain, water-brash, vomiting and asthma ; it subdues the action of the deranged Váyu and Kapham, removes constipation of the bowels, and helps to create a healthy secretion of the Pittam. The **Airávata** and **Dantashatha** (different varieties of Jamvira are acid and tend to bring on an attack of hæmoptysis.

The fruit (of such trees as the Ashvatha, the Plaksha, the Audumvura, etc., which pass by the general name) of Kshira-Vrikshas as well as those which are known as the **Jámva**, **Rájádana**, **Todana**, **Tinduka**, **Vakula**, **Dhanvana**, **Ashmantaka**, **Ashvakarna**, **Phalgu**, **Parushaka**, **Gángeruka**, **Pushkara**, **Varti**, **Villa** and **Vimvi**, etc. are cooling, and astringent in their effect. They subdue the Pittam and Kapham, tend to produce a condition of parchedness in the system, and have a sweet and astringent taste.

Of these the fruit of trees which belong to the genus **Kshiri-Vrikshas** is heavy and cooling, and is long retained in the stomach in an undigested state. It has a sweet, acid and astringent taste and does not inordinately derange the Váyu. The fruit

known as the **Jámvava** generates the Váyu. It is astringent, and subdues the Pittam and Kapham, while the **Rájádana** is demulcent, sweet, astringent and heavy. The **Todana** is acid, astringent, and sweet in its taste and is parchifying and subdues the Pittam and Váyu. It is (heat-making) in its potency, easily digestible (light of digestion), astringent, demulcent and appetising and further generates the Pittam. Unripe **Tinduka** fruit is astringent, and heavy in digestion and produces Váyu in the organism, while in its ripe or fully matured stage it is sweet, and subdues the Kapham and Pittam. The **Vakula** fruit has a sweet and astringent taste, is demulcent and astringent in its properties, imparts a greater firmness to the teeth, and removes the viscid condition of the membranes. The fruit of the **Dhanvana** has an astringent taste, and is cooling and palatable and subdues the Váyu and Kapham. The fruit of the **Gangeruka** and **Ashmantaka** is possessed of similar properties as the preceding ones. The **Phalgu** fruit is long retained in the stomach in an undigested state, has a sweet taste, and is heavy of digestion, refreshing, and demulcent in its effect. Raw or unripe **Parushaka** fruit is extremly acid in taste with a shade of the sweet, leaves an astringent after-taste, is light of digestion, generates the Pittam, and subdues the Kapham; while in its ripe state it is sweet in taste, subdues the Váyu and Pittam, is sweet in digestion and cooling in its

potency and proves curative in cases of hæmoptysis. The **Pushkara** fruit is sweet, and is long retained in the stomach in an undigested state. It produces the Kapham and is tonic, and heavy of digestion (hard to digest). Raw and tender **Vilva** fruit subdues the Váyu and Kapham. It is keen, demulcent astringent, and appetising, has a pungent, bitter and astringent taste, and is heat-making in its potency, while in its ripe state it leaves a sweet after-taste. Further it is heavy of digestion, can be but incompletely digested, and is long retained in the stomach, causing it thus to distend and producing the emission of a fetid-smelling flatus. The **Vimvi** fruit, as well as that known as the **Ashva-karna**, is galactagoguic. They destroy the Pittam and Kapham and prove beneficial in cases of thirst, burning sensation of the skin, fever, hæmoptysis, cough, asthma and consumption.

The fruits such as, the **Tála**, **Nárikela**, **Panasa** and **Maucha**, etc. are sweet in taste and of digestion, and subdue the Váyu and Pittam. They are cooling in their potencies, and act as constructive tonics. Of these the fruit of a **Tála** is sweet in taste and heavy of digestion. It subdues the deranged Pittam. The pulp found inside its seeds is sweet of digestion and diuretic, and it subdues the Váyu and Pittam. The **Nárikela** fruit is heavy of digestion, demulcent, anti-choleric, sweet, cooling in its potency,

tonic, tissue-building, pleasant, laxative and diuretic. It subdues the Pittam. The **Panasam** is sweet and astringent in taste, demulcent and heavy of digestion. The **Maucham** has a sweet and astringent taste, not cooling in its potency, proves curative in cases of hæmoptysis, acts as a spermatopoietic and improves the relish for food. It generates the Kapham and is heavy of digestion.

The fruits such as the **Drákshás, Káshmaryas, Madhukas, Kharjuras**, etc., have a sweet taste, are heavy of digestion and prove curative in cases of hæmoptysis. Of these **grapes** are laxative, beneficial to the voice, sweet, demulcent, and cooling in their potency. They prove beneficial in cases of hæmoptysis, fever, asthma, thirst, burning sensation of the skin, and consumption. The fruit known as the **Káshmarya Phala** is pleasant and diuretic. It purifies the blood, improves the intellect and growth of hair, and is rejuvenescent and subdues the Váyu and Pittam. **Kharjuras** are possessed of the virtue of arresting all bodily wastes. They prove beneficial in Urakshata, are pleasant, cooling in their potency, refreshing, heavy of digestion, sweet in taste, and prove curative in cases of hæmoptysis. The flowers of **Madhuka** trees are tissue-building, unpleasant and heavy of digestion, while their fruit subdues the Váyu and Pittam.

Fruits such as the **Vátáma, Akshoda, Abhishuka, Nichula, Pichu, Nikochaka,** and **Urumána**, etc. are demulcent, heat-making in their potency, heavy of digestion, constructive, tonic, and sweet in taste. They subdue the Váyu, Pittam and Kapham.

The fruit known as the **Lavali** is astringent and slightly bitter in taste, improves a relish for food, and is pleasant, aromatic and refreshing to the whole system. It subdues the Kapham and Pittam. The fruits such as the **Vasiram**, and the **Shitapákyam**, as well as the stems of **Bhallátaka** trees, are hard to digest and are long retained in the stomach in an undigested condition. They tend to produce a state of dryness in the organism, derange the Váyu, are cooling in their potency, sweet of digestion, and prove curative in cases of hæmoptysis.

The fruits known as the **Airávata** and the **Dantashatha** have an extremely acid taste and tend to bring on an attack of hæmoptysis. The fruit known as the Tanka is cooling in its potency, has a sweet and astringent taste, is heavy and generates the Váyu. The fruit known as the **Aingudam** is demulcent, and heat-making in its potency, has a sweet and bitter taste, and subdues the Váyu and Kapham. The **Shami** fruit is heavy, sweet and heat-making, produces a state of parchedness in the organism, and helps the falling off of hair. The **Shleshmátaka** fruit is

heavy of digestion, generates the Kapham, and is sweet in taste and cooling in its potency.

Fruits such the **Karira, Akshaka, Pilu** and **Trināshunya** have a sweet, bitter and pungent taste, and are heat-making in their potency. They subdue the Váyu and Kapham. Of these the **Pilu** has a bitter and astringent taste. It generates the Pittam, acts as purgative, is pungent in digestion, keen, heat-making and oily. It subdues the Váyu and Kapham. The **Arushkara** and **Tauvaraka** fruits have an astringent taste, are pungent in digestion, heat-making in their potency and prove curative in cases of worms in the intestines, fever, constipation of the bowels (Ánáha) and Meha. Fruits such as, the **Karanja, Kinshuka,** and **Arishtaphalam** (Nimva) are vermifugenous and pungent in digestion, and prove curative in cases of Leprosy, Gulma (internal tumour), Ascites, Piles and Prameha. The **Vidanga** fruit produces a state of dryness in the body, is heat-making in its potency, light, and pungent in digestion, subdues the Váyu and Kapham and is slightly bitter and anti-toxic. The **Abhayá** (Chebulic Myrobalans) proves curative in cases of ulcers, is heat-making (in its potency), and acts as a purgative, tends to reduce corpulency and subdues the deranged humours. It is appetising and invigorating to the eye-sight, has an acid and astringent taste, and proves curative in œdema and

cutaneous affections. The **Aksham** fruit is possessed of purgative properties, is light (of digestion), and produces a state of dryness in the organism. It is heat-making in its potency, produces hoarseness (Aphonia), is a vermifuge and is beneficial to the sight, has an astringent taste, is sweet in digestion and subdues the Pittam and Kapham. The **Puga** fruit subdues the Pittam and Kapham, produces a state of dryness in the organism, cleanses the mouth of all secretions and impurities, has a slightly sweet and astringent taste, and is possessed of laxative properties. The fruits and vegetables such as the **Játikosha**, the **Játi Phalam**, the **Kataka Phalam** the **Kakkolakam, Lavanga** and the **Karpura** etc., have a bitter pungent taste, subdue thirst and Kapham, are light in digestion, and remove bad odours from the mouth and cleanse it of all impurities. The **Karpura** has a slightly bitter taste, is aromatic, cooling in its potency, and light in digestion. It is possessed of liquefacient properties and is specially recommended in dryness of the mouth and fetid breath. The **Latá-Kasturiká** is similar in its virtue to the Karpura and is cooling and both laxative and diuretic. The pith of the **Piyála** fruit has a sweet taste, is spermatopoietic and subdues the Váyu and Pittam. The pith (the kernel found inside the seeds) of the **Vaibhitaki** fruit is intoxicating and subdues the deranged Váyu and Pittam. The pith or the kernel of the **Kola** fruit has an astringent sweet

taste, subdues the Váyu and Pittam allays thirst and alleviates nausea and vomiting. The kernel of the seed of the **Ámalaka** resembles the last named pith in its properties. The kernels of such fruits as the **Vijapuraka**, **Shampáka** and **Koshámra** are sweet in digestion, appetising, demulcent, and subdue the Váyu and Pittam. These kernels of seeds should be regarded as possessing identical properties as the pulps of the fruits from which they had been extracted. All fruits with the exception of Vilva are efficacious in their ripe and matured condition. The latter (Vilvas) have been enjoined to be eaten unripe for medicinal purposes as well as with a view to derive a greater efficacy from their use. Unripe **Vilvas** are astringent and appetising in their effect, heat-making in their potency, and have an astringent-pungent-bitter taste.

Fruit, which is blighted or that affected by any other disease or thát which has grown in an improper season, or raw or over-ripe, or worm-eaten, should be rejected as unfit for use. Here the description of the fruit-group is ended.

The group of Potherbs :—Now we shall deal with the properties of potherbs. The fruits of such creepers as the **Pushpaphalá**, **Alávu** and **Kálindak** destroy the Pittam, generate the Váyu, and slightly produce the **Kapham**. They tend to increase the discharge of the stool and urine, and are sweet in taste and digestion,

Of these the tender **Kushmándas** are light in digestion, heat-making in their potency, and contain a greater proportion of alkaline matter. They are appetising, diuretic and pleasant in their effect, and tend to subdue the action of all kinds of deranged humours, and prove wholesome in cases of mental aberration, such as, insanity, etc. The **Kálindak** tends to reduce the quantity of semen and impairs the eye-sight. It generates both the Váyu and Kapham, while an **Alávu** is a purgative, produces a condition of parchedness in the system, is heavy in digestion and extremely cooling in its potency. The species, known as the **bitter Alávu**, is unpalatable and has an emetic property, and subdues the Váyu and Pittam.

The fruits such as the **Trapusha**, **Ervárnka**, **Karkáru**, and **Shirna-Vrinta** are heavy in digestion and long retained in the stomach in an undigested state. They are palatable, cooling in their potency, generate Kapham, tend to facilitate the discharge of stool and urine, contain a little alkaline matter, and are sweet in taste. A green and tender **cucumber** subdues the Pittam, while **one** which is of **a pale yellow** colour acts as a stomachic. A **ripe** and **yellow Trapusham** tends to subdue the Pittam only in the event of its possessing an acid taste. Similarly, ripe **Ervárukas** and **Karkárus** generate the Váyu and Kapham, have a sweet taste, and are found to be charged with alkaline matter. They are appetising, relishing and do not inordi-

nately generate the Pittam. A **Shirna-Vrinta** (water melon) contains a little alkaline matter, is sweet, and purgative. It generates the Kapham; is pleasing and appetising in its property, and proves curative in cases of Ánáha and Ashthilá.

The spices and herbs include the Pippali, Maricha, Shringavera, Árdraka, Hingu, Jiraka, Kustumvuru, Jamviraka, Sumukha, Surasá, Arjaka, Bhustrina, Sugandhaka, Kásamaraddka, Kálamála, Kutheraka, Kshavaka, Ksharapushpa, Shigru, Madhu-Shigru, Phanijhyaká, Sarshapa, Rájiká, Kuláhala, Benu, Gandira, Tilaparniká, Varshábhu, Chitraka, Mulaka-Potiká, Lashuna, Palándu and Kaláya, etc.

Metrical Texts :—Potherbs have a pungent taste, are relishing, and heat-making in their potency, and subdue the Váyu and Kapham. They are variously used for seasoning food. Of the above-said spices and herbs, the unripe or immature **Pippali** is heavy in digestion, sweet in taste, cooling in potency and generates Kapham.

Dried **Pippali** subdues the Váyu and Kapham, acts as a spermatopoietic and slightly soothes the Pittam. Green or immatured Maricha is sweet of digestion, heavy and phlegmagoguic in its effect. Dry **Maricha** has a pungent taste, is light of digestion and heat-making in its potency. It is anti-spermatopoietic, destroys the Váyu and Kapham, and slightly subdues

the Pittam. The white **Maricha** is neither too cooling nor too heat-making in its potency, is more efficacious than the two preceding varieties and is specially invigorating to the eye-sight. The **Nágaram** destroys the Váyu, has a pungent taste, and is sweet of digestion. It is heat-making in its potency, acts as a spermatopoietic and aphrodisiac, is pleasant and imparts a relish to food. It is appetising, light of digestion, and charged with an oily substance. The **Árdrakam** has a pungent taste, is heat-making in its potency, acts as a pleasant spermatopoietic, subdues the Váyu and Kapham, proves beneficial to the voice, and relieves colic pain and suppression of the stool and distension of the stomach. The **Hingu** is light of digestion, heat-making in its potency, acts as a digestant, and is appetising. It subdues the Váyu and Kapham, has a pungent taste, is demulcent, laxative and sharp, and relieves colic pain, indigestion and suppression of stool. The **Jiraka** (whether white or yellow) is sharp and heat-making in its potency, pungent in digestion and imparts a relish to food. It has a pungent taste, is appetising and aromatic, increases the Pittaṁ, and destroys the Váyu and Kapham. The species, known as **Káravi** and **Karavi**, like the Upakunchiká, are possessed of properties similar to those of the aforesaid Jiraka, and are variously used in seasoning dishes and condiments. Raw or undried **Kustumvari** (coriander seeds) is sweet, aromatic and pleasant, while in its

dried state it is sweet in digestion, acts as a demulcent, allays thirst, and alleviates the burning sensation of the skin. It has a slightly bitter and pungent taste, tends to subdue the deranged humours of the body and purifies its internal channels. **Jamvira** is digestant, sharp and acts as a vermifuge. It subdues the Váyu and Kapham, and is aromatic, appetising and pleasant. It tends to remove the bad taste in the mouth, and alleviates cough, dyspnœa and diseases due to the action of the deranged Váyu and Kapham or due to poison. The **Surasá** generates the Pittam, relieves the colic and pain at the sides, while the **Sumukha** is said to be possessed of the same properties with the exception that it neutralises the effects of poisons brought about through the chemical combination (of several incompatible substances in the organism). The herbs known as the **Surasá**, **Arjaka** and **Bhustrina** destroy the Kapham, are light of digestion, and tend to produce a state of parchedness in the organism. They are demulcent, generate the Pittam, and are heat-making in their potency and pungent in taste and digestion. The herb called the **Kásamardaka** has a bitter and sweet taste. It subdues the Váyu and Kapham, is a digestant, cleanses the throat and specially subdues the Pittam. The **Shigru** has a pungent, alkaline, sweet and bitter taste and generates the Pittam, while the **Madhu-Shigru** variety is laxative, has a bitter and pungent taste; is appetising and removes œdematous swelling of the

body. The **Sárshapa** herbs, as well as those known as **Gandira and Vega**, can be but imperfectly digested. They tend to suppress the discharge of stool and urine, produce a state of dryness in the organism, are sharp and heat-making in their potency, and serve to derange the three fundamental humours of the body. The herbs called **Chitraka** and **Tilaparni** are light (of digestion), and subdue the Kapham and œdema. The herb known as the **Varshábhu** subdues the Váyu and Kapham. It proves beneficial in cases of œdema, abdominal dropsy and piles. The **Mulaka-Potiká** has a pungent bitter taste. It is pleasant, appetising, light and throat-cleansing, tends to impart a greater relish to food, and subdues the action of all kinds of deranged humours. Raw or immature **Mulaka** of the larger species is heavy in digestion and long retained in the stomach in an undigested state. It is irritating and tends to produce a derangement of the three humours of the body, while boiled with oil or butter it acts as a demulcent and subdues the Váyu, Pittam and Kapham.

Dried **Mulaka** subdues the action of the three deranged humours. It is anti-toxic and light (of digestion). All dried herbs with the exception of the preceding one generate the Váyu and take a long time to be digested.

The properties described in connection with the Mulaka bulb in its different stages of growth and

conditions can also be attributed to its flowers, leaves and fruits respectively. **Mulaka** flowers subdue the Pittam and Kapham, while their fruit subdues the Váyu and Kapham. **Rasona** is demulcent, heat-making, sharp, pungent, slimy, heavy and laxative. It has a palatable taste and is tonic, spermatopoietic, and tends to improve the voice, intellect and complexion and to bring about an adhesion of fractured bones. It alleviates heart-disease, indigestion, fever, Vivandha, Kukshi-Shula, Gulma, a non-relish for food, cough, asthma, piles, Kushtha, dulness of appetite, swelling (Shopha), worms and diseases due to the Váyu and Kapham. **Palándu** is not excessively heat-making in its potency, has a pungent taste, is heavy, tonic and appetising. It slightly generates the Pittam and Kapham. It subdues the Váyu.

The species, known as the Kshira-Palándu, is demulcent, cooling in its potency, and relishing, imparts a steadiness to the fundamental principles of the body, is tonic, promotes the growth of flesh, improves the intellect and increases the Kapham. It is palatable, heavy, slimy and proves beneficial in cases of hæmoptysis. The potherbs called Kaláya subdue the Pittam and Kapham, generate Váyu, are heavy and sweet in digestion, and leave an astringent after-taste in the mouth.

The leaves of plants and trees known as the

Chuchchu, Juthiká, Taruni, Jivanti, Vimvitiká, Nandi, Bhallátaka, Chagalántri, Vrikshádani, Phanji, Shálmali, Shelu, Vanashpati-prasava, Shana, Karvudára and Kovidára etc., have an astringent, sweet and bitter taste, and prove curative in hæmoptysis. They subdue the Kapham, generate the Váyu and are astringent in their action and light of digestion (easily digestible). Of these, the Chuchchu is light of digestion, and acts as a vermifuge. It is slimy, proves beneficial to ulcers, is sweet and astringent in taste and action. It tends to subdue the action of the three deranged humours (Tridosha). The Jivanti herb is beneficial to the eyes and subdues all kinds of deranged humours. The leaves of the Vrikshádani plant subdue the Váyu. Phanji leaves are slightly tonic. The leaves of trees or plants belonging to the Kshira-Vriksha or to the Utpala group are cooling in their potency, astringent in their taste and action, and prove beneficial in dysentery, (intestinal hæmorrhage) and hæmoptysis.

The leaves of the Punarnavá, Varuna, Tarkári, Uruvuka (white castor), Vatsádani, and Vilva etc., are heat-making in their potency, and have a sweet and bitter taste and pacify the deranged Váyu. Of these, the Punarnavá are specially possessed of the virtue of removing œdema (Shopha).

The potherbs, such as the Tanduliyaka, Upodiká,

Ashvavalá, Chilli, Pálankyá, and Vástuka etc., are laxative and diuretic, and have a sweet and alkaline taste. They slightly generate the Váyu and Kapham, and cure hæmoptysis.

Metrical Text :—Of these, the species known as the Tanduliya is sweet in taste and digestion, and proves curative in cases of hæmoptysis and somnolence (due to the effects of poison, wine or vitiated blood). It is antitoxic and extremely cooling in its potency, and produces a state of parchedness in the system. The Upodiká species is sweet in taste and digestion. It is spermatopoietic, anti-narcotic, cooling, laxative, demulcent and tonic. It generates the Kapham, and subdues the Váyu and Pittam in the system. The species called the Vástuka is a pungent (in digestion), vermifuge, and is tonic. It improves the intellect and digestion and is alkaline, laxative and relishing, and tends to subdue all kinds of deranged humours of the body. The species Chilli resembles the Vástuka in its properties, while those of the Pálankyá is identical with those of the Tanduliya. It generates the Váyu, produces a state of parchedness in the system, and tends to suppress the discharge of stool and urine. It proves remedial to the deranged Kapham and Pittam. The potherbs Áshvavala produces a condition of dryness in the organism and tends to suppress the discharge of stool and urine and Váyu (emission of flatus).

The potherbs (leaves of edible plants) such as the Mandukaparni, Saptalá, Sunishannaka, Suvarchalá, Brahma-suvarchálá, Pippali, Guduchi, Gojihvá, Kákamáchi, Prapunnáda, Avalguja, Satina, Vrihati-phala, Kantakáriká-phala, Patola, Vártáku, Káravellaka, Katukiká, Kevuka, Uruvuka, Parpataka, Kirátatikta, Karkotaka, Arishta, Koshátaki, Vetra, Karira, Átarushaka, Arkapushpi, etc., are light and palatable, and prove curative in hæmoptysis, Kushtha, Meha, fever, dyspnœa, cough and create a relish for food.

Metrical Texts :—The Mandukaparni and the Gojihviká species are alike in their properties, the former being astringent and beneficial to the Pittam, sweet in taste and digestion, cooling in its potency and of easy digestion. The Sunishannaka species is easily digested and is unattended with any acid reaction. It is astringent in its action and tends to subdue the three deranged bodily humours, and it also arrests the evacuations of the bowels. The Abulguja has a bitter taste, is pungent in digestion and subdues the deranged Pittam and Kapham. The potherb Satina is slightly bitter and astringent in taste and tends to subdue the three deranged humours of the body. The Kákamáchi herb is neither too cooling nor too heat-making in its potency and removes cutaneous affections. It subdues the deranged humours as the preceding

species. The fruit of (the two species of) Vrihati plants has an astringent and bitter taste, and is light of digestion. It is vermicidal and proves curative in cases of itch and cutaneous diseases (Kushtha), and subdues the deranged Váyu and Kapham. The leaves and fruit of the Patola creeper have a bitter taste. They are beneficial to ulcers, pungent in digestion, heat-making, spermatopoietic, relishing and appetising. They subdue the deranged Pittam and Kapham without producing the Váyu. The Vártákam subdues the Váyu and Kapham. It has a bitter and pungent taste, is light, relishing and appetising. Matured Vártákam is alkaline (in its taste) and generates the Pittam. The Karkotakam and the Káravellakam are possessed of properties similar to those of the preceding species (Vártákam). The herbs and creepers such as the Atarushaka, Kirátatikta, Parpataka and Guduchi together with the tender shoots of the Vetra and the Nimva, have a bitter taste and subdue the Pittam and Kapham. The leaves of the Varuna and Prapunnáda destroy the deranged Kapham and give rise to a condition of dryness in the system. They are light of digestion, cooling in their potency, and tend to enrage or agitate the bodily Váyu and Pittam. The potherbs known as Kálashákam are appetising and pungent in taste and tend to neutralise the effects of poison originated through the chemical action of two incompatible substances in

the organism. The species called Kaushumbha has a sweet taste, and produces a condition of dryness in the organism. It is heat-making in its potency and light of digestion, and subdues the deranged Kapham. The species called Náliká-shákam has a sweet taste. It generates the Váyu and subdues the Pittam. The species called the Chángeri has an acid, astringent and sweet taste. It is appetising and heat-making in its potency, proves beneficial in cases of deranged Váyu and Kapham and curative in cases of mesenteric disorders (Grahani) and piles.

The leaves of the Loniká, Játuka, Triparniká, Pattura, Jivaka, Suvarchalá, Kuruvaka, Kathinjara, Kuntaliká, Kurantiká etc., are sweet in taste and digestion and cooling in their potency. They subdue the Kapham and do not inordinately generate the Pittam. They leave a saline after-taste in the mouth and produce a condition of dryness in the organism. They are alkaline and laxative, and generate the Váyu. The potherbs known as Kuntaliká have a sweet and bitter taste. The species Kurantiká has an astringent taste. The species called the Rájakshavak-Shákam, as well as the one called Sathi-Shákam, is astringent in its property, cooling in its potency, easily digestible and is not hostile to (does not enrage or aggravate), (subdues D.R.) the humours. The species known as the Harimanthajam is sweet in taste and diges-

tion but is difficult to digest. The species known as Kaláyam (leaves of the Matara pulse) is purgative and sweet in taste. It produces a state of dryness in the organism and extremely generates the Váyu. It tends to dislodge the deranged humours from their locations in the upper part of the body Sramsanam). The Putikaranjas are heat-making in their potency and alleviate œdema and anasarca. They are pungent in digestion, easily digestible and subdue the Váyu and the Kapham. The leaves of the Támvula are sharp, heat-making (in their potency) and bitter, astringent and pungent in taste. They tend to aggravate the Pittam, are aromatic, prove beneficial to the voice, and remove viscidness in the organism. They pacify the Kapham and Váyu in the system, are appetising, pungent in digestion and deodorant, and tend to remove the fetid smell in the mouth, cleanse it of all impurities and alleviate all itching sensations experienced inside its cavity. This ends the description of potherbs.

The Flower Group :—The flowers of such trees as the Kovidára, Shana, and Shálmali are sweet in taste and digestion and prove curative in cases of hæmoptysis The flowers of the Vrisha and Agastya have a bitter taste, are pungent in digestion and alleviate a wasting cough (Phthisis). The flowers of the Madhu-shigru and Karira are pungent in digestion. They destroy the Váyu and increase the discharge of

stool and urine. The Agastya flower is neither too cooling nor inordinately heat-making in its potency and proves specially beneficial in cases of night-blindness (Nyctalopia). The flowers of the Rakta-Vriksha, Nimva, Mushkaka, Arka, Asana and Kutaja trees subdue the Pittam and Kapham, and prove curative in skin diseases (Kushtham).

The Padma has a bitter and sweet taste, is cooling in its potency, and subdues the deranged Pittam and Kapham. The Kumuda has a sweet taste, and is slimy, demulcent, pleasing and cooling in its potency. The two varieties of the same species known as the Kuvalayam and the Utpalam, slightly differ from the preceding varieties in their properties. The Sindhuváram is renowned for its virtue of destroying the Pittam. The Mallikā and Málati flowers have a bitter taste and subdue the Pittam owing to their sweet scent. The Vakulas, like the Pátala flowers, are sweet smelling and pleasant, their pleasing and odoriferous property instantaneously permeates the whole system. The Nágam (flower), like the Kumkumum, is antitoxic and subdues the Pittam and Kapham. The Champakam is curative in cases of hæmoptysis. It is both cooling and heat-making in its potency and subdues the deranged Kapham. The Kinshukam, like the Kurantakam, subdues the Kapham and Pittam.

A flower should be understood as possessed of the same properties which are natural to the tree or plant on which it grows. The (tender stem) of the Madhu-Shigru is pungent in taste and subdues the deranged Kapham.

The Kshavaka, the Kulechara, and the tender sprouts of Vansha, etc., generate the deranged Kapham, and tend to increase the discharge of stool and urine.

Metrical Texts :—The Kshavakam helps the germination of worms in the intestines. It is slimy and sweet in taste, and tends to increase the secretions of the internal organs. It generates the Váyu and does not inordinately increase the Pittam and Kapham in the body. The tender sprouts of Venu generate Kapham and are sweet in taste and digestion. They can be but imperfectly digested and produce the Váyu in the organism. They have a slightly astringent taste and tend to produce a state of extreme parchedness in the system.

The Udbhida Group :—Mushrooms are generally found to grow on stacks of straw (Palala), or are seen vegetating on the stems of bamboo (Venu) or sugar-cane (Ikshu), or as sprouting up from beneath the surface of the ground (Udbhida), or growing on a heap of decomposed cow-dung (Karisha.) Of these, those which grow on stacks of (decomposed) straw

(Palálam) are sweet in taste and digestion and tend to produce a state of dryness in the organism. They subdue the three deranged humours of the body. Those which vegetate on the stems of sugar-canes (Ikshujam) have a sweet pungent taste. They leave an astringent after-taste in the mouth and are cooling in their potency. Mushrooms growing on decomposed cow-dung (Karisha) should be regarded as possessed of properties similar to those of the preceding class. They aggravate the Váyu, are heat-making in their potency, and have an astringent taste. Those which vegetate on the stems of bamboos (Venuja) have an astringent taste and tend to enrage or aggravate the bodily Váyu. Mushrooms which grow on the ground (Bhumija) are heavy of digestion and do not inordinately generate the Váyu, their tastes varying according to the soil they grow on.

Pinya'ka Group :—The Pinyáka (levigated powder or cake of linseed or mustard pressed in an oil-mill), the Tilakalka (the levigated powder of sesamum of which the oil has been similarly pressed out), and the Sthuniká-shuska-Sháka (leaves and stems of plants pasted and made into pills or balls) tend to enrage all the deranged humours.

Metrical Texts :—Sthuniká balls are long retained in the stomach in an undigested state, thus giving rise to a distension of that organ, and

tend to enrage or aggravate the bodily Váyu. Moist Sindákis are the (leaves and stems of the Mulaka, etc. slightly boiled and pasted with pungent and aromatic spices and then made into balls.) There are two kinds of Sindákis the dry and the moist. They generate the Váyu and are appetising, and tend to impart a greater relish to food. All sweet or palatable potherbs are purgative and heavy of digestion, produce a state of dryness in the organism, are generally indigestible and long retained in the stomach in an undigested state, causing it to distend. They are marked wlth a shade of the astringent in their taste.

Of flowers, leaves, fruits, stems and bulbs, each succeeding one is heavier (of digestion) than the one immediately preceding it in the order of enumeration. Potherbs and leaves of edible plants which are found to be rough or putrified or worm-eaten, as well as those growing on an improper or incongenial soil, or making their appearance in an unnatural season of the year, should be rejected as unfit for use. This ends the description of the Pushpa-shákas.

The Bulb Group :—Now we shall discourse on the virtues of edible bulbous plants or herbs (Kandas). The bulbs of plants and creepers such as the Vidári-kanda, Shatávari, Visha (bulbs of the lotus plant), Mrinála (the upper stem of the lotus plant), Shringátaka, Kasheruka,

Pindáluka, Madhváluka, Hastyáluka, Kástháluka, Shankháluka, Raktáluka, Indivara and Utpala etc. alleviate hæmoptysis, are cooling in their potency, sweet in their taste and heavy of digestion. They tend to increase the semen in large quantities and augment the quantity of milk in the breast of a human mother. The bulb known as the Vidári-Kanda has a sweet taste, and acts as a constructive tonic and is spermatopoietic. It is cooling in its potency, beneficial to the voice, and imparts strength to the system. It is extremely diuretic and subdues the Váyu and Pittam. The Shatávari has a sweet and bitter taste and is spermatopoietic. It subdues the Váyu and Pittam, the one belonging to the large-sized species being palatable and appetising and tonic. The latter improves the intellect and proves curative in cases of mesenteric diarrhœa (Grahani) and piles, and is spermatopoietic, rejuvenating, restorative, and cooling in its potency. The under-sprouts of this creeper (large-sized Shatávari) have a bitter taste and subdue the Pittam and Kapham. The Visham* proves curative in cases of hæmoptysis, and is long retained in the stomach in an undigested state, though it falls under the category of substances which can be but partially digested. It

* Bulbs of lotus plants—though certain authorities aver that the inner lining or membranous fibres of a lotus-stem are called Visha, the outer covering being known as the Mrinálam.

is tasteless or insipid, generates the Váyu, and is hard to digest, producing a condition of dryness in the organism. The bulbs known as the Shringátaka and the Kasheruka are heavy of digestion, are long retained in the stomach in an undigested state, and are cooling in their potency. The Pindálukam generates the Kapham, is heavy of digestion, and tends to enrage or agitate the bodily Váyu. The Surendrakanda is pungent in digestion, generates the Pittam and subdues the Kapham. The sprouts of the Venu are heavy of digestion, and tend to enrage the Kapham and Váyu.

The bulbs (Kanda) known as Sthula-Kanda, Shurana-Kanda, and Mánaka, etc. have a slightly astringent and pungent taste, and tend to produce a state of dryness in the organism. They are heavy of digestion, and subdue the Pittam, and are long retained in the stomach in an undigested condition.

Metrical texts :— The species known as the Mánaka is sweet, and cooling in its potency and heavy of digestion, while the one called the Sthula Kanda, is not inordinately heat-making in its potency. The species Surana is usually found to be curative in cases of piles and rectal polypi and condylomata. The bulbs of such aquatic plants as the Kumuda, Utpala and Padma have an astringent taste and are sweet in digestion. They are cooling in their potency and tend to enrage the Váyu and pacify

or subdue the deranged Pittam. The bulb known as the Vráhakanda is pungent in taste and digestion, and is possessed of spermatopoietic, tonic, rejuvenating and restorative properties. It subdues the Kapham, and proves efficacious in cases of Meha, skin diseases (Kushtham), and in ailments due to the presence of parasites in the intestines. The top-piths of such trees, as the Tála, Nárikela, Kharjura etc., are sweet in taste and digestion. They prove curative in cases of hæmoptysis, and are spermatopoietic. They subdue the Váyu and generate the Kapham in the body. Edible bulbs, which are extremely tender or immature, diseased, decomposed or sprouting in an improper season of the year, or are worm-eaten, should be rejected as unfit for use. This finishes the description of the bulb group.

The Salt Group (Lavana Varga) :—The different varieties of salt such as the Saindhava, the Sámudra, the Vida, the Sauvarchala, the Romaka and the Audbhidam (prepared from vegetable alkali), etc., should be successively deemed as more heat, Váyu, Kapham, and Pittam making, and more demulcent, sweeter and more purgative and diuretic, considered in the inverse order of enumeration.

Saindhava salt is beneficial to the eyes, palatable, relishing, light, appetising, demulcent, slightly sweet in digestion, spermatopoietic and cooling in its

potency. It is one of the most potent auxiliaries in combating the action of the deranged humours of the body. The variety called the Sámudram (sea-brine) is sweet in digestion, and not inordinately heat-making in its potency. It is not indigestible, but purgative, slightly demulcent, and does not inordinately generate the Pittam, and is good in attacks of colic pain (Shula). The variety known as Vida salt is a little alkaline (in its taste) and is appetising. It tends to produce a condition of dryness in the organism, and proves beneficial in cases of colic (Shula,) and in diseases affecting the heart. It imparts a relish to food, is sharp and heat-making in its potency, and restores the deranged bodily Váyu to its normal state (restoring or setting aflow the nerve-current by removing any obstruction). Sauvarchala salt is light of digestion, heat-making in its potency, and pungent in taste. It is appetising, has an agreeable aroma, removes any viscidness from the internal organism, and proves curative in cases of abdominal glands, colic pain and incarceration of scybala in the bowels. Romaka salt is sharp and intensely heat-making. Its action permeates the whole system immediately after its use, and is pungent and light of digestion. It subdues the Váyu, tends to increase the secretion of the internal organs, enters into the minutest capillaries of the body, and is purgative and diuretic. Audbhida salt is light, sharp, and heat-making in its potency.

It acts as a moistener to the internal organs, has a pungent bitter taste, and is charged with a small quantity of alkali. It permeates the minutest capillaries, and tends to restore the deranged Váyu to its normal condition. Gutiká salt destroys the deranged Váyu and Kápham, and is vermifugal, appetising, digestant and purgative. It tends to aggravate the Pittam and acts as an internal liquefacient or antifat. The salt quarried from a salt mine situated at the foot of a hill (Shailamulaja), or from a sandy (Valukelam) or alkaline soil (Ushakshára), has a pungent taste, and helps the disintegration of Kapham, etc. (Chhedi). It is also called pungent (Katu) salt.

The group of Alkalis :—The different varieties of alkali (Kshára) such as the Javakshára (Carbonate of potash), the Svarjikákshára, the Pákima and the Tankana cure abdominal glands, piles, mesenteric diarrhœa, and gravel and stone in the bladder. All these varieties of alkali should be regarded as possessed of digestant or stomachic properties. Their abuse is known to have brought about cases of hæmoptysis. Of these, the varieties known as the Javakshára and Svarjikákshára are inflammatory as fire, and they tend to reduce Kapham, remove Vibondha (suppression of stool etc.), piles, and abdominal glands and prove curative in cases of enlarged spleen. They are anti-spermatopoietic. The alkali

known as Usharakshára is heat-making in its potency, and subdues the deranged Váyu. It tends to increase the slimy (mucous) secretions in the organs and is detrimental to the strength of the body. The variety called Pákima tends to reduce obesity, causes a free and increased discharge of urine, thus fully relieving the bladder of all its contents (lit : bladder-cleanser). The alkali known as the *Tankanakshára* (borax) tends to produce a condition of dryness in the organism, generates the Váyu, subdues the Kapham, and is appetising in its property. It is moreover known to bring about a derangement of the Pittam, and is sharp in its potency.

The Metal group :—Gold has a sweet and agreeable taste, acts as a tonic or restorative elixir, imparts rotundity to the body, and subdues the action of all the three deranged humours of the body. It is cooling and antitoxic in its potency and invigorates the eyesight. Silver has an acid taste, is laxative and cooling (in its potency), presents a glossy or oily aspect, and destroys the Pittam and Váyu. Copper has a sweet and astringent taste, and acts as a liquefacient and corrosive agent. It is laxative and cooling in its potency. Kánsya Indian bell-metal) has a bitter taste, and acts as a liquefacient agent. It subdues the Kapham and Váyu, and is beneficial to the eyesight. Iron generates Váyu, is cooling in its potency, allays thirst and subdues

the deranged Pittam and Kapham. Zinc and lead are vermifugal, as well as liquefacient and corrosive. They have a saline taste. Pearls, corals, diamonds, sapphires, Vaidurya (lapis lazuli), crystals, etc. are beneficial to the sight, and cooling in their potency. They are anti-toxic and act as liquefacient or corrosive agents. They are possessed of sacred prophylactic virtues, and bring good luck to men who wear them, and cleanse their wearers from all impurities. Thus the description of the salt group is ended.

Metrical texts :—The intelligent shall determine the properties of cereals, flesh, fruits, potherbs, etc., (other than those described under their respective heads in the present chapter), which should be determined with the help of their respective tastes, as well as from the nature of the predominant material principles which enter into their composition. The Shastika, barley, wheat, Rakta-Sháli, and the pulses such as the Mudga, the Adhakia, and the Masura should be regarded as the best and by far the most nutritious of the cereals which fall under the respective heads of the Paddy Group (Dhányavarga). The flesh of the Láva, Tittiri, Sáranga, Kuranga, Ena, Kapinjala, Mayura (peacock), Varmi and Kurma (tortoise) should be regarded as the best of those of all other animals respectively belonging to their own species. Of fruits, those called *Dádimva, A'malaka, Drákshá,*

Kharjura, Parushaka, Rájádana and *Mátulunga* should be considered as the most commendable and efficacious. Of potherbs those known as the *Satina, Vástuka, Chuchchuka, Chilli, Mulaka-Potiká, Mandukaparni,* and *Jivanti* should be regarded as possessed of the most commendable properties. Cow's milk is the best of milks, and similarly, clarified butter made from the milk of a cow should be considered as pre-eminently the best and the most efficacious of clarified butters.

Saindhava salt is the best of all other salts. *Dhátri* and *Dádimva* fruit are the best of all the acid kinds; *Pippali* and *Nágara* of all pungent, and *Patola* and *Vártákam* of all bitter vegetable substances. Honey and clarified butter occupy the highest place in the list of all sweet articles. *Pugaphalam* and *Parushakam* are the best of all astringent fruit. Sugar is pre-eminently the best of all the modifications of the sugar-cane juice, while Mádvirka and Ásava (grape-juice) are the best of all cordials. Similarly, the corn (lit: paddy) of a year's standing or matured for a year after being harvested, is the most efficacious. The flesh of a young animal, as well as well-cooked rice prepared, that day, fully ripe fruit, and fresh and tender potherbs should be deemed as the best of their respective kinds.

The kritanna varga :— Now we shall fully

deal with the properties of cooked and prepared food (Kritánnas). A gruel (Manda) of fried paddy seasoned with powdered Pippali and Nágara proves a wholesome diet to a patient after the exhibition of purgatives and emetics, inasmuch as it is digestant, appetising and agreeable, and tends to restore the bodily Váyu to its normal condition. *Peyá* is diaphoretic, appetising, light of digestion, diuretic (lit: bladder-cleanser). It allays thirst and hunger, and tends to remove the sense of fatigue and exhaustion. It serves to rekindle an impaired appetite and restore (lit: soothes down) the deranged Váyu to its normal condition. *Vilepi* acts as an emulcent food and soothes the entire organism. It is tonic, and imparts strength and rotundity to the frame. It is light, astringent, appetising, agreeable, quenches thirst and satisfies hunger. The *Yavágu*, when cooked with meat, potherbs and fruit, is hard to digest. It is otherwise agreeable, soothing, spermatopoietic, tissue-building, and tonic. Manda is prepared by carefully excluding all the residuary shreds of its component substances, while Peyá is cooked without any such exclusion. A gruel, which abounds with such seedy shreds, is called Vilepi, while the variety, which is slightly fluid and extremely seedy in its consistency, is named Yavágu. The preparation known as the Páyasa (a sort of porridge cooked by boiling rice with milk and sugar) is long retained in the stomach in an undigested state and is heavy of digestion,

though it tends to impart strength to the body, and generates fat and Kapham in the organism.

The dish called Krishará (a gruel cooked by boiling rice with flesh and sesamum) generates the Kapham and Pittam, imparts strength to the body, and subdues the Váyu. A meal consisting of white coloured, well threshed, sweet smelling rice, which has been washed with care and properly boiled, and well strained afterwards, is digested with ease and in the shortest space of time, in the event of it being eaten hot or warm. On the contrary, a meal consisting of uncleansed and unwashed rice improperly boiled and taken cold without having been properly strained takes a longer time to be digested. Fried rice is light and aromatic, and generates the Kapham. Rice boiled and cooked with clarified butter or any such fatty substance, as well as with meat, acid fruits, or with any kind of pulse, forms a rich and heavy food which helps to build up new tissues, and imparts strength and rotundity to the body. Rice boiled and cooked with milk (in a manner other than that of preparing the Páyasa) acquires properties similar to those of the preceding one. A soup made of any sort of fried pulse (such as the Mudga, etc.) without its husks is light and wholesome. Similarly, potherbs (Shákas) well boiled and well squeezed and subsquently cooked with oil or any ohter

lardaceous substance are wholesome, while those which are cooked in a different manner should be considered as possessed of contrary virtues.

Meat is naturally spermatopoïetic and imparts gloss and strength to the system. Moreover, that which has been cooked and prepared with clarified butter, curd, sour gruel (Kánjika), acid fruits (as the pomegranate etc.) pungent and some aromatic condiment, (as black pepper, etc.) should be considered as a very wholesome diet, though heavy of digestion. It is possessed of relishing, strength-giving and tissue-building properties.

The condensed soup or extract of the afore-said meat, thickened with milk curd and clarified butter, and seasoned and cooked with such aromatic condiments (as black pepper, asafœtida, etc.), tends to aggravate the Pittam and Kapham, and acts as an appetising, constructive tonic. The meat, which has been several times fried with clarified butter and then boiled in warm water and afterwards prepared dry with such condiments as Jiraka, etc. (so as to have all the butter and seasonings fully absorbed in its body —Parishushka-Mánsa) should be considered as a tooth-some, exhilarating, emulcent food, though heavy of digestion. It imparts firmness to the limbs and increases a relish for food, improves the appetite and intellect,

builds up fresh tissues, gives rotundity to the frame, and produces an increased quantity of semen and (ojas) albumen in the organism. The meat cooked and prepared in the foregoing manner, when minced and made into cakes, is called Ullupta-Mánsam, which resembles the above-said Parishushka-Mánsam in its properties, though it is lighter than the latter owing to the fact of its having been cooked over a charcoal fire. The same meat, cooked on an iron rod over a charcoal fire, becomes a little heavier as far as digestion is concerned, inasmuch as it is roasted with clarified butter, etc.

The varieties of cooked meat such as, the Ullupta (minced meat), the Bharjita (fried), the Pishta (made into balls or cakes), the Pratapta (roasted with clarified butter over a charcoal fire), the Kandupáchita (dipped in mustard oil and powdered aromatic condiments and roasted and done to a honey colour over a charcoal fire), the Parishuska and the Pradigdha go by the general name of Shulyam (cabob). Of the varieties of Shulyám, those which are boiled with oil should be considered as heat-making in their potency, heavy of digestion and as generating the Pittam, while those, which have been fried with clarified butter, should be regarded as light, appetising, agreeable, relishing, beneficial to the eyes, and cooling in their potency. They also subdue the Pittam and are pleasant to the

taste.* A thin meat soup is a pleasant tonic, and proves beneficial in cases of dyspnœa, cough, and consumption. It subdues the Pittam and Kapham, destroys the Váyu, and has an agreeable taste. It is wholesome to persons of weak memory and reduced semen, as well as to those suffering from cachexia peculiar to chronic fever, from general emaciation of the body, from ulcerative endocarditis (Urakshata), or from diseases affecting the voice or the albumen (ojas). It is known to bring about an adhesion and reduction of fractured and dislocated bones, and increases the quantity of semen and oja (albumen) in subjects found wanting in those two important principles of life. Meat-soup, prepared with the juice of the Dádima, etc., and seasoned with pungent condiments, increases the quantity of semen and tends to subdue the action of all the three deranged humours of the body.

The use of meat of which the essence has been previously extracted fails to contribute to the growth and strength of the organism, and is long retained in an

* **Additional text** :—In the dish known as the **Prataptam**, the meat is first fried with clarified butter, then pasted and flavoured with the addition of curd, pomegranate-juice etc. and is again cooked with clarified butter, Ajaji, and Sámudra salt over a charcoal fire, each of the preceding substances being added to it in succession during cooking over a gridiron. Meat luted with sesamum paste and cooked with the addition of flavouring condiments to a honey colour is called **Kandupakkam**, while the one soaked in asafœtida and water and cooked over a gridiron over a smokeless fire by sprinkling water over it with the addition of pomegranate juice, etc, is called **Shulyam**.

undigested state in the stomach and impairs digestion. It is insipid, generates the Váyu in the organism, and tends to produce a state of parchedness in the body. The dish known as the Khánshka Mánsa (a kind of dried meat) is very hard to digest (heavy of digestion) and proves wholesome only to men of strong digestive powers. The cooked meat called the Veshavára (boneless boiled meat subsequently pasted and cooked with treacle, clarified butter, black pepper, Pippali, and Shunthi, etc.) is heavy of digestion, demulcent, strength-giving, and alleviates diseases due to the action of the angry Váyu. The dish known as the Sauvira is soothing to all the fundamental principles of the organism. It specially removes parchedness of the mouth, allays thirst and hunger, and is palatable and cooling in its potency.

Mudga soup subdues the Kapham, and is appetising and agreeable. It forms the most wholesome diet to persons whose systems have been cleansed with the aid of purgative and emetic remedies, as well as to those suffering from ulcers. The soup known as the Rága-Shádava (which is another name for Mudga soup prepared with grapes and expressed pomegranate-juice) is light, and imparts a relish to food. It is not hostile to the deranged humours of the body but (slightly subdues their action). The soup of the Masura, or of the Mudga, or of the Godhuma or

of the Kulattha pulse, prepared with salt is inhostile to the Pittam and Kapham, and is specially recommended in nervous diseases (Vatá-Vyádhi). The soup of the Masura etc., cooked and prepared with raisins and pomegranate-juice is beneficial to patients suffering fromVáta-Vyadhi. It is relishing, appetising, agreeable, and light (of digestion). Soups of Mudga, etc., prepared with Patola or Nimva tend to reduce the quantity of fat and Kapham in the organism, subdue the Pittam, are appetising and agreeable, and prove curative in cases of Kushtha (cutaneous affections) and diseases of parasitic origin. Mudga soup prepared with Mulaka removes dyspnœa, cough, catarrh, water-brash, fever and a relish for food. It tends to reduce fat and Kapham in the organism, and proves curative in diseases affecting the throat.

The soup of the Kulattha pulse cures diseases due to the action of the deranged Váyu, as well as asthma, catarrh, and Tuni, Pratituni, cough, piles, abdominal glands (Gulma and Udávarta. Prepared with the expressed juice of the Dádima or Ámalaka it acquires an agreeable taste, pacifies the deranged humours, and is light, appetising and strength-giving in its virtues. It proves curative in epilepsy and obesity, and subdues the deranged Váyu and Pittam. Mudga soup cooked with Ámalakas acquires an astringent property, and proves beneficial in derangements of the Kapham and Pittam.

The soups of the Yava, Kola and Kulattha pulses destroy the Váyu and are beneficial to the larynx. Similarly, soups of all the pulses, which go by the name of Shami-Dhányas, increase the strength and rotundity of the body. Khala and Kámvalika soups are respectively agreeable and subdue the Váyu and Pittam.

All soups cooked and prepared with the expressed juice of pomegranate should be known as strength-giving, demulcent, and heavy of digestion. They subdue the Váyu and Pittam. Soups, made and flavoured acid by the mixture of whey, produce the Pittam and tend to vitiate the blood and besides aggravate the effects of any imbibed poison lurking in the system.

The soups and gruels respectively known as the Kharayusha,* the Khara-Yavágu,† the Shádava‡ and the Pánaka should be prepared with the advice, and according to the instructions of a physician. The soup, which is cooked or prepared without the admixture of any salt, condiments (black pepper, pungent spices) or any oily or lardaceous substance, is called the Akrita-Yusha (unseasoned soup), whereas the one which is cooked and seasoned with the foregoing

* Mudga soup prepared with whey, horse-apple, Amrul (oxalis corniculata), cumin seeds, black pepper and the roots of Chitá (Plumbago Zeylanica).

† Gruel prepared in the manner of Khara-Yusha.

‡ Mudga soup in the composition of which things of sweet, saline, astringent, acid and pungent tastes largely enter.

spices and substances oil, clarified butter, etc., is called a seasoned soup (Kritá-Yusha). Of the soups and extracts of meat respectively cooked and prepared with the modifications of cow-milk (curd, whey, etc.), Kánjika and acid fruits (pomegranate, etc.) each succeeding variety should be deemed lighter and more wholesome than the one immediately preceding it in the order of enumeration. The soup cooked with the cream of the curd and the expressed juice of the Dádima is called Kámvalika soup. Articles of food prepared with sesamum and its levigated cake, or those in the composition of which dried pot herbs, rice threshed out of sprouting paddy or Sindáki (a species of potherbs described before) enter, should be considered as heavy of digestion. They subdue the Pittam and increase the Kapham. The Vatakas resemble the Sindákis in their properties, but are heavy of digestion and admit of being incompletely digested, giving rise to a kind of acid re-action. The varieties of soups known as the Rága* and Shádava are light, tissue-building, spermatopoietic, agreeable, relishing, and appetising in their properties. They alleviate thirst, epileptic fits, vertigo and vomiting, and remove the sense of fatigue or exhaustion.

The variety of food known as the Rasálá† is con-

* Is made of sugar, Saindhava salt, tamarind, Sarjikshára, Parushaka and the expressed juice of Jambuline fruits ; while the Shádava soup is prepared with salt and acid and sweet fruits.

† A sweet aromatic preparation consisting of acid buffalo-curd, refined sugar, milk, powdered cardamom, camphor and black pepper.

structive, tonic, demulcent, spermatopoietic and relishing. Curd sweetend with treacle is agreeable. It generates the Váyu in the system, and tends to increase the oily principle in the organism. Powdered barley soaked in clarified butter and made into a dough with water, which is neither too thick nor too thin in its consistency, is called Mantha, which acts as a tonic immediately on it being partaken of. It allays thirst and removes the sense of fatigue and exhaustion. The Mantha, treated with treacle and clarified butter, proves curative in cases of difficult urination and obstinate Udávarta. A Mantha prepared with sugar, raisins (Drákshá) and the expressed juice of sugar-cane, removes diseases due to the derangement of the Pittam. Mantha, containing raisins and Madhuka fruit, successfully combats diseases brought about through the action of the deranged Kapham. A Mantha saturated with the three aforesaid substances (acid and lardaceous, sugar and raisins) tends to restore the stool to its normal condition.

The Pánakas :—Well diluted treacle (Pánaka), no matter whether it has been rendered acid or not with the admixture of Amla (lemon juice), is diuretic and heavy in respect of digestion. Water saturated with treacle, Khanda (unrefined sugar), sugar or grapes, and made acid with the admixture of any acid substance, and scented with camphor, should be deemed the

best of refreshing beverages. Water saturated with the (expressed juice of) grapes removes the sense of fatigue, allays thirst, and alleviates epileptic fits, and burning sensation of the body. Water potion flavoured with the (expressed juice of) Kola or Parushaka is agreeable and long retained in the stomach in an undigested state. The lightness or heaviness of a potion (Pánaka should be determined according to the quantities, properties and preparations of the articles and substances that enter into its composition. Here ends the description of the specific properties of varieties of prepared food, etc. (Kritánna).

Now we shall describe the virtues of the articles of confectionary according to their tastes, potencies, and digestive reactions.

Confectionary—Such as is made with the modifications of milk, is called the Kshira Bhakshyas (flour dissolved and stirred in milk with sugar, etc.) It is tonic, spermatopoietic, agreeable, appetising and aromatic, and tends to impart rotundity to the frame. It subdues the Pittam and does not belong to the group of inconpletely digestibles. Of these, the variety known as the Ghritapuras (articles of food prepared by putting clarified butter in doughs of corn-flour) is strength-giving and agreeable. It subdues the Váyu and Pittam, is spermatopoietic, and heavy of digestion, and tends to create new flesh and blood. The

articles of food known as the Gaudikás prepared by putting treacle into doughs of corn-flour) are flesh-making, spermatopoietic, and heavy in respect of digestion. They subdue the Váyu and Pittam and generate the Kapham and do not give rise to any reactionary acidity after digestion. The articles of food bolonging to the groups of Madhumastakas, Sanyávas, and Pupas, are heavy in respect of digestion but are flesh building in their properties. Modakas are extremely indigestible. Sattakas (curd cream saturated with unrefined sugar and powdered Trikatus, and then filtered through a piece of clean linen, and seasoned with camphor and pomegranate seeds) impart a relish to the food. They are appetising, beneficial to the voice, heavy in respect of digestion, extremely palatable and strength-giving. They subdue the Váyu and Pittam (Kapham according to others). Vishyandana* is agreeable, aromatic, sweet and demulcent. It destroys the Váyu, and generates the Kapham and is heavy, and strength-giving. Articles of food or confectionary made of powdered wheat (Sámita) act as constructive tonics, and subdue the Váyu and Pittam. Of these, the variety known as the Phenaka (Khájá of our present-day confectioners) is agreeable, extremely wholesome and light. Cakes stuffed with Mudga-Veshaváras are long

* Powdered wheat treated with milk, clarified butter and treacle, and made into a paste neither too thick nor too thin in its consistency is called Vishyandana.

retained in the stomach in an undigested state, while those containing minced and pasted meat (Veshaváras) are heavy and flesh building in their properties. Confectionary known as the Pálalas (a preparation of treacle, pasted sesamum and corn flour) generates the Kapham; while the Shashkulis (Luchis and Kachuris of our modern confectioners) tend to increase the Pittam and Kapham in the organism. Cakes made of powdered rice (Pishtakas) are heat-making in their potency and tend to enrage or aggravate the Kapham and Pittam. They further give rise to a reactionary acidity after digestion, and are specially heavy in respect of digestion, and are slightly strength-imparting. Confectionary made of Vaidalas (such as the Mudga pulse etc.) has an astringent taste, is light in respect of digestion, subdues the Váyu and Kapham, is purgative, and tends to restore the Pittam to its normal state, though apt to be long retained in the stomach in an undigested state. Cakes made of Másha pulse are tonic, spermatopoietic and heavy of digestion. Similarly, those that are made of Kurchiká are heavy in respect of digestion and do not inordinately generate the Pittam. Articles of confectionary made of sprouting Mudgas, etc., are heavy of digestion, generate the Váyu and Pittam, give rise to a reactionary acidity after digestion, and tend to bring on nausea and waterbrash (Utklehsha), besides producing a parched condition in the organism, and also affecting

the eye-sight. Confectionary fried in clarified butter has an agreeable taste and aroma, is light, spermatopoietic, and tonic, subdues the Váyu and Pittam, and tends to improve the complexion and invigorate the eyesight. Similarly, that which is fried in oil is heavy as regards digestion, pungent in its digestive reaction, and heat-making in potency. It destroys the Váyu, generates the Pittam and tends to affect the sight and produces cutaneous affections. Confectionary made of fruit, meat, modifications of sugar-cane juice (treacle, sugar, etc.), sesamum and Másha pulse is tonic, heavy of digestion, tissue-building and palatable. Articles of food fried in broken vessels of baked clay, or cooked over a charcoal fire should be considered as light in respect of digestion and as possessed of the virtue of aggravating the bodily Váyu, while those that are prepared with lumps of curdled milk should be considered as heavy (of digestion) and as increasing the Kapham. Kulmáshas (half boiled Chanakas or gram) generate the Váyu, produce loose stool, and are heavy of digestion, and tend to produce a condition of parchedness in the organism. Articles of food made of fried barley (Vátya) prove curative in cases of Udávarta, cough, catarrh and Meha. Dhána (fried barley) and Ulumva (Mudga pulse etc., boiled over a fire) are light of digestion and absorb the excess quantity of fat and Kapham in the body. Barley powder (dissolved in

water so as to form a sort of thin, pasty potion) is flesh-building and spermatopoietic. It allays thirst, acts as an instantaneous tonic, subdues the Pittam, Kapham and Váyu, and is possessed of purgative properties. Made into thin pasty balls or lumps they become heavy as regards digestion, while transformed into a thin potion with the addition of a copious quantity of water they are known to acquire a contrary virtue (light). Barley powder used as lambative is easily and speedily digested owing to the softness of its consistency. Fried paddy alleviates vomiting and dysentery, and has an astringent sweet taste. It is appetising, tonic, and light of digestion, allays thirst, constipates the bowels, and tends to restore the deranged Kapham to its normal condition. Pulverised fried paddy alleviates thirst, vomiting, and a burning sensation of the skin, arrests perspiration, and proves curative in cases of hæmoptysis and Dáhajvara (a type of bilious fever characterised by unquenchable thirst and hyperpraxia). Prithuka (thrashed or pasted paddy) is heavy of digestion, demulcent and flesh-building, and increases the Kapham in the system. Taken with milk it acts as a tonic and is laxative and destroys the Váyu. Immature or newly-harvested rice has a sweet taste, is hard to digest and acts as a tissue-builder. Old or well matured rice brings about the adhesion of fractured bones and proves curative in cases of Meha. As a large variety of substances

enters into the composition (of our daily food), a physician should prescribe a course of diet for his patient after carefully considering the nature of the food stuffs and the properties they acquire through combination and seasoning, as well as the natural longings of a person for a certain kind of food during the preponderance of certain deranged humours of the body.

Anupánam or After-Potions :—Now we shall discourse on drinks and potions which are found to be beneficial when taken after a certain kind of food (Anupánas.)

Certain people oppressed with an acid taste naturally long for sweets, while others in full satiety of sweet articles have a relish for acid things. Hence something acid is good for the eater of sweets, and sweets are good for men who have partaken of an acid food.

Cold water and warm water, Ásava (wine), Madya (spirits), the soup of Mudga pulse etc., the juice of acid fruits, sour paddy gruel, milk and essence of meat are generally used as drinks after a full meal. Of these, that alone which would prove beneficial to a person should be given him in an adequate quantity. The intelligent physician should determine the kind of after-drink (potion) required in each case after taking into consideration the nature of the disease under treatment, the season of the year, and the properties of the solid or liquid substances that enter into the composition of the

diet. Of all kinds of after-potions, clear heavenly (atmospheric) water, kept in a pure vessel, should be deemed the best, inasmuch as such water contributes in every way to the welfare (is conducive to the bodily growth) of a person throughout his life, and all the six different tastes are inherent in that heavenly fluid. Briefly we have stated the rule to be observed in respect of after-potions, now we shall dilate upon their specific properties. Hot water should be taken after any oily or lardaceous substance other than those known as the oils of Bhallátaka and Tauvaraka. Certain authorities hold that the soup of Mudga pulse and sour rice gruel (Kánjika) should be respectively taken (in summer and winter) after having taken a large quantity of oil in the course of a meal. Cold water should be taken after cakes and honey, as well as after curd, Páyasa porridge, and also in cases of poisoning and derangements due to the effects of wine. According to several authorities tepid water should be taken after any kind of cake (preparation of rice paste etc.)

Milk or meat essence should be prescribed as an after-potion to persons habituated to meals of Shali-rice or Mudga pulse, or who have become fatigued with the labours of a battle or of a long journey, or who are oppressed with the heat of the sun or of a blazing fire, as well as to those who would

be found to be overcome from the effects of poison or wine. Sour rice gruel, or cream of curd should be drunk after having taken Másha pulse, etc. Wine (Madya) is the proper after-drink for persons addicted to it, which is also recommended after a meat diet. Cold water or acid fruit juice (such as that of the pomegranate, etc.) forms the best after-drink for those who are not in the habit of taking wine. Milk is ambrosia to persons enfeebled with arduous study, or excessive sexual intercourse, and to every one after an exposure to the sun after a long troubled journey. Wine (Surá) is the after-drink for enfeebled subjects, and water saturated with honey is the potion for corpulent persons. Healthy persons may use a variety of desserts and beverages during and after meals. Things which are demulcent in their virtues and heat-making in their potency should be considered as a wholesome diet in diseases due to the deranged Váyu. Substances, which are heat-making in their potency and tend to produce a condition of parchedness (Ruksha) in the organism, should be prescribed as a wholesome diet in diseases brought about through the action of the deranged Kapham. Similarly, those which are sweet and cooling in their potency, prove wholesome in Pittajá distempers. Milk and the expressed juice of sugar-cane are beneficial to persons suffering from hæmoptysis. The Ásavas (wines) of the Arka, Shelu, and Shirisha are beneficial to those suffering from the effects of any poison.

Now we shall separately describe the after-drinks to be taken after having used the articles of food dealt with under the several groups discussed before. The acid soup of Indian Jujubes (Kola) should be taken after a meal consisting of any of the afore-said cereals such as, the Shukadhányam, Kudhányam, etc. Sour gruel should be used after a meal of Mudga pulse, or of any similar grain. The Asava (wine of the Pippali should be used after a meal of the long thighed venisons, or of the flesh of those of the Dhanvaja family. Kola and Vadara wines should be used after having taken the cooked flesh of the fowls of the Vishkira species. The wine of Kshira-Vriksha should be used after a meal consisting of the flesh of the Pratuda species. Cocoanut and date palm wines should be used after having eaten the flesh of the cave-dwelling (guhá-shaya) species. Krishna Gandhá wine should be used after the flesh of the Parna-Mriga (arboreous) family. Ashvagandhá wine should be taken after the flesh of the Prasaha species. Phalasára wine should be taken after the flesh of any of the hole-dwelling (Vileshaya) animals. Triphalá wine should be taken after the flesh of an animal with unbifurcated hoops (Ekashapha). Khadira wine should be taken after the flesh of an animal with bifurcated hoofs.

The Ásava (wine of Shringátaka or Kasheruka should be taken after having eaten the flesh of an animal of

the Kulechara (frequenting the shores of lakes etc.) species. The same wines should be regarded as proper after-potions after a meal consisting of molluscs (Koshastha), or of the flesh of an animal of the Pádi (lizard) family. Ásava of sugar-cane (vinegar) should be taken after having eaten the flesh of an animal of the Plava (diving) family. Mrinálam wine should be taken after any Nádeya fish (whose habitat is the river). Mátulungu wine should be taken after the flesh of any of the sea fish (Sámudra). Padma (lotus bulb), wine should be taken after acid fruits. Pomegranate, or Vetra wines should be taken after astringent fruits. The Ásava of Kanda [Khanda—D. R.] treated with the three pungent drugs known as the Trikatus should be taken after sweet fruits. Sour and fermented rice gruel should be taken after Tála fruits, etc. The wine of Durvá, Nala, or of Vetra should be taken after pungent fruits. The Ásava of Shvadanstrá or of Vasuka should be taken after Pippalis, etc. Dárvi, or Karira wines should be taken after Kushmándas, etc. The Ásava of Lodhra should be taken after taking the Chuchchu, potherbs etc. Triphalá wine should be taken after the Jivanti, potherbs, etc., and the same rule should be observed in respect of Kusumbha potherbs.

The Ásava (wine) of the drugs known as the Mahá Panchamula should be taken after such potherbs as

the Manduka-parni, etc. Wines of acid fruit should be taken after the pith or marrow of such trees as the Date-palm, Tála, etc. The wine known as the Surásava, or fermented rice gruel should be taken after an excess of Saindhava salt, etc. Water may be taken in absence of the proper after-drink in all cases.

Authoritative verses on the subject.—Atmospheric or rain water is the best of all drinks and cordials. That kind of water is wholesome to a person to which he is habituated from his birth. Hot water is beneficial in derangements of the Váyu and Kapham, and cold water is good in diseases which have their origin in the vitiated blood, or in the deranged Pittam. An excessively heavy meal, as well as the one which usually tends to derange the fundamental humours of the body, may be easily and speedily digested with the help of a suitable after-drink. A proper after-potion taken after a meal brings on a fresh relish for food, increases the bulk of the body, acts as a spermatopoietic beverage, disintegrates the combination or accumulation of the deranged bodily humours, soothes the organism, increases the softness of the body, removes the sense of fatigue and exhaustion, brings on pleasurable sensations in its train, stimulates the appetite, subdues or pacifies the deranged bodily humours, allays the thirst, improves the complexion, and imparts tone and vigour to the system.

Any beverage resorted to at the commencement of a meal tends to produce a gradual emaciation of the frame; the one taken during the course of a meal guards against both its thinning and corpulency, while the one drunk at the close of a meal serves to greatly add to its growth and rotundity. Hence, drinking at meals should be most judiciously determined and taken with the greatest forethought and discretion. The food carried down into the stomach of a person unused to such liquids long retains undigested and resists being converted into chyme or being digested, and becomes a positive source of discomfort. Hence, the use of an after-potion is imperatively obligatory on all human beings, except those suffering from dyspnœa, cough, ulcerative endocarditis (Urahkshata), ptyalism, aphonia, and from diseases affecting the part of the body situated above the clavicles.

After the use of an after-potion, a long walk, a lengthy conversation, singing, sleeping and reading should be refrained from, in order that the imbibed potion may not affect the stomach, and (aggravate the bodily humours) which taking lodgment about the regions of the throat and chest may give rise to a secretion of mucous, impair the appetite, develop such distressing symptoms as vomiting etc., and produce many other distempers as well.

The lightness or heaviness of a food stuff does not

go contrary to nature.* These properties depend more upon the mode of cooking or preparing them than upon the nature of the substances themselves;* more upon the quantity in which they are taken than the mode of their cooking or preparation ;† and more upon the food (lit. boiled rice) itself than upon the quantity of its use,‡ and more upon the time (of its maturity) than upon the food.§

The question of lightness or heaviness of a food stuff affects the idle, the unhealthy, the luxurious, and men of delicate constitution and impaired appetite, and such nice discernment of the properties of an article of food is not imperatively obligatory on strong, healthy men of active habits and good healthy digestion, who are habituated to hard and solid fares, and who can tolerably afford to dispense with such thoughts altogether. Here ends the description of the group of after-potions.

Hear me, O my child, discourse on the rules to be observed in connection with eating. The kitchen

* If it be asked why the flesh of an animal of the Jamghála family is light? The answer would be because it is naturally so.

* As for example, Vrihi corn is naturally heavy of digestion, but fried Vrihi seeds are light.† As for instance, a heavy food should be taken till the appetite is but half satisfied, while an article which is light with regard to digestion may be eaten to satiety.‡ As for instance, of the varieties of food such as the Manda, Peya, Vilepi, Bhakta and Pishtaka, each succeeding one is heavier than the one immediately preceding it.§ As for example, newly harvested rice is heavier than the one of a year's standing.

should be made spacious and kept clean and pure, and none but the trusted ones should have access thereto. The physician should get the food or diet prepared by experienced cooks (so as to impart to it the taste and the colour he desires), and have it kept at a clean and pure spot, concealed from the view of the public. After that, the food having been made innocuous by the admixture of anti-toxic medicines, and freed from all poison by reciting (an Arthavan) mantra over it, and having been besprinkled with the water of mystic incantation, should be served (to the king).

Serving of a Meal :—Now I shall describe the mode of serving out the different dishes. Clarified butter should be served out in a vessel of steel (Kánta-Loha) ; Peyá, in a silver bowl ; and all kinds of fruit and confectionary (such as the Laddukas), on leaves. The preparations of meat known as the Parishushka and Pradigdha Mánsam should be served on golden plates ; fluid edibles and meat essences in silver bowls ; Katvaras and Kharas in stone utensils ; and cool boiled milk (Payah) in copper vessels. Other drinks, wines and cordials should be given in earthen pots ; and Rága-Shádavas and Sattakas, in cool pure glass bowls, or in vessels made of crystal and Vaidurya gems. The cook should place the bowls containing preparations of pulse, boiled rice and lambatives on clean, spacious trays

of fanciful design, and spread them out in front (of the king.) All kinds of desserts, confectionary and dry viands should be served on his right, while all soups etc., meat-essences, drinks, cordials, milk, Khada-Yusha, and Peyá should be placed on his left. Bowls containing preparations of treacle, Rága-Shádava, and Sattaka should occupy a place midway between the two sets of bowls described above.

The intelligent physician, well conversant with the rules of serving dishes as above laid down, should attend upon the king at his table, and spread out on the purified level floor of a solitary, beautiful, spacious, blissful, perfumed and flower-decorated chamber, and the king should partake of those sacred and pleasant dishes, served neither hot nor cold, and cooked and seasoned in the desired mode, and possessed of their specific tastes.

The physician in attendance should see that the king first partakes of the sweet dishes, then of the acid and saline, and of the pungent and other ones at the close of the meal.* First or at the forepart of a meal, such fruit as the pomegranate, etc., should be eaten, after that, Peyás and boiled rice and prepared dishes, as

* The taste of sweet viands eaten at the outset would naturally go to subdue the Váyu located in the stomach ; acid or saline taste partaken of at the middle of a meal would rouse up the fire of digestion located in the pancreas (Agnyáshaya), while the pungent taste enjoyed at its close would tend to subdue the Kapham.

well as confectionary. Certain authorities maintain that solid or thick viands should be eaten at the outset, while others aver that the contrary should be the rule. Of fruits, the Ámalaka has the greatest humour-destroying properties, and is the most harmless of them all. Ámalaka (fruit) is therefore recommended at the outset, middle and the close of a meal. Such things as the Mrinálam (the stem of a lotus plant), the Visham (the lotus bulb), Sháluka, Kanda and sugar-cane should be eaten at the beginning of a meal, and never at its close. A man, who is well-read in the Science of medicine (Áyurveda), should sit during his meal in an easy posture on a high seat and partake, at the right time, with his body erect and his whole mind engaged in the act of eating light, wholesome emollient and warm viands, which are congenial to his temperament and abound in fluid preparations, with an adequate quantity of boiled rice, neither too hurriedly nor too slowly, even when feeling the pinch of a keen and piercing hunger.

Food eaten with a good appetite tastes pleasant and relishing. The food which is congenial to one's temperament begets no discomfort after the eating. Light food is soon digested. Emollient food gives tone and vigour to the system. Warm food improves the appetite. Food eaten neither too slowly nor too hurriedly is uniformly digested. Food abounding in

fluid components is not imperfectly digested, nor is attended by any acid reaction. Moderation in food leads to a happy and perfect digestion and tends to maintain the fundamental principles of the body in their normal state.

During the cold months, when the nights are longer, substances, which tend to subdue the bodily humours which are naturally deranged during that season, should be eaten in the morning, while during the seasons, when the days are inordinately long, things which are congenial in those seasons should be eaten in the afternoon. (In spring and autumn) when days and nights are equal, the meal should be taken just at the middle part of the day and night.*

A meal should not be eaten before the appointed time, nor before the appetite has fully come. Similarly, over or insufficient eating should be equally refrained from. Eating at an improper time and before the system feels light and free brings on a large number of diseases, and may ultimately lead to death. A meal eaten at an hour long after the appointed time tends to aggravate the bodily Váyu, which affects the

* This rule holds good in the case of persons, who eat a single meal in the course of a day and night. Those, who are in the habit of eating two meals a day, should eat a light half meal at one and quarter Prahara in the morning and another between the third and the fourth Praharas in the afternoon (Panjikákára). According to Jejjada, the meals should be between the third and the fourth Prahara both in the day and night.

digestive fire, and offers serious obstacles in the way of its digestion. The food thus digested with difficulty in the stomach creates discomforts and destroys all desire for a second meal. Insufficient diet gives but inadequate satisfaction, and tends to weaken the body. Over eating, on the contrary, is attended with such distressing symptoms, as languor, heaviness of the body, disinclination for movements, and distension of the stomach, accompanied by rumbling in the intestines, etc. Hence it behoves a man to take only as much food as he can easily digest, which should be well cooked and made to possess all the commendable (adequately nutritive) properties. Moderation in diet is the golden rule, besides taking into consideration the demerits of a particular food before partaking thereof and the nature of the time (day or night) it is eaten.

Boiled rice food (Annam) which is impure and dirty, infested with poison, or out of which another has eaten a portion as well as that which is full of weeds, pebbles, dust etc., which the mind instinctively repels, or cooked on the previous day or which has been kept standing over-night, as well as that which is insipid or emits a fetid smell, should be similarly rejected. Also food which has been cooked long ago, or has become cold and hard, and has been rewarmed or which has been imperfectly strained, or is burnt and insipid should also not serve as food. More

and more palatable dishes should be successively taken in the course of a meal. During the course of a meal, the mouth should be frequently rinsed or gargled inasmuch as the palate thus constantly being cleansed becomes more susceptible to taste, and anything eaten thereafter is relished the better and gives all the pleasures of a first morsel. The palate affected with a sweet taste at the outset fails to appreciate the tastes of the successive dishes. Hence, the mouth should be washed at intervals during the meal. Sweet food eaten with a relish pleasurably affects the mind, brings joy, energy, strength, and happiness in its train, and contributes to the growth of the body ; whereas the one of a contrary character is attended with opposite effects. The food, which does not satiate a man even after repeated eating, should be considered as agreeable (Svádu) to him. After finishing a meal water should be drunk in a quantity which would be beneficial. Food adhering to the teeth should be gently drawn out by means of a tooth-pick, inasmuch as if not removed a kind of fetor is produced in the mouth.

The Váyu is increased after the completion of digestion, the Pittam, during the continuance of the process, while the Kapham is increased immediately after the act of eating. Hence, the Kapham is to be subdued after the close of a meal, and the intelligent eater should attain that end by partaking fruit

of an astringent, pungent, or bitter taste, or by chewing a betel leaf prepared with broken areca nut, camphor, nutmeg, clove, etc., or by smoking, or by means of anything that instantaneously removes the viscidity in the cavity of the mouth, and permeates it with its own essence.

Then the eater should take rest, like a king, till the sense of drowsiness incidental to eating is removed. After this he should walk a hundred paces and lie down in a bed on his left side. After eating, a man should enjoy soft sounds, pleasant sights and tastes, sweet perfumes, soft and velvety touch, in short anything that ravishes the soul and enwraps the mind with raptures of joy, since such pleasurable sensations greatly help the process of digestion. Sounds, which are harsh and grating, sights, which are abominable, touches, that are hard and unpleasant, smells, which are fetid and disagreeable, encountered after a meal, or the eating of impure and execrable boiled rice, or a loud side-splitting laugh after a meal is followed by vomiting.

The after-meal siesta should not be long and continuous ; basking before a fire, exposure to the sun, travelling, driving in a carriage, swimming, bathing etc., should be avoided just after the close of a full and hearty meal. A diet which abounds in fluid courses should be refrained from. Only a single taste should not be enjoyed in the course of a meal.

Cooked potherbs, boiled rice of inferior quality, and a course of diet abounding in acid taste should be avoided. Articles of one taste should not be eaten in large quantities at a time, nor articles of various tastes should be constantly indulged in. A second meal should not be eaten on the same day in the event of the appetite having become dulled by a previous meal. Eating with a previous meal only partially digested seriously impairs the digestive functions. A man of dull or impaired appetite should refrain from eating heavy articles of food, as well as from partaking of large quantities of light substances. Cakes should never be eaten, and a double quantitiy of water should be taken if they are eaten at all out of hunger, by which their safe digestion would be ensured. Of drinks, lambatives and confectionary (solid food), each succeeding one is heavier than the one immediately preceding it in the order of enumeration. Heavy-articles of food should be taken in half measures only, while the lighter ones may be eaten till satiety. Liquid food, or that which abounds in liquid substances should not be taken in large quantities. Dry articles of food taken in combination with a large number of other substances fail to do any injury to the stomach. Dry food (Annam) taken alone can not be completely digested. It is transformed into lumps in the stomach, is irregularly chymed, and produces deficient gastric digestion followed by

a reactionary acidity. The injested food; whether of a character that stamps it as belonging to the Vidáhi group or not, is but incompletely digested and gives rise to a reactionary acidity in the event of the Pittam being confined in the stomach, or in the intestines. Dry food (cakes, etc.), incompatible food combinations (milk with fish and so on), and those, which are long retained in the stomach in an undigested state, tend to impair the digestive functions (Agni).

The Kapham, Pittam, and Váyu respectively produce the types of mucous indigestion of chyme (Ámájirnam), acid indigestion (Vidagdhájirnam), and indigestion due to incarcerated fecal matter (Vishtabdhájirnam). Certain authorities aver that there is a fourth class of indigestion, known as the indigestion of unassimilated chyle (Rasa-shesha). Drinking of an abnormal quantity of water, irregular eating, voluntary suppression of any natural urging of the body, sleep in the day, keeping of late hours in the night, partaking of a light food with a strong appetite are the factors which interfere with the proper digestion of food and develop symptoms of indigestion. The food taken by a person under the influence of envy, passion, greed, or anger, etc., or by a man suffering from a chronic distemper, is not properly digested.

Types of Indigestion :—A case of indigestion in which the undigested food matter ac-

quires a sweet taste is called chymous (or mucous) indigestion (Ámájirnam), that in which the undigested food acquires an acid taste in the stomach is called Vidagdha indigestion. The form in which the food matter brought down into the stomach is partially or irregularly digested (one portion being digested, the other being not) followed by a pricking or piercing pain in the stomach and entire suppression of the flatus, is called Vishtabdha indigestion. The type known as indigestion of unassimilated chyle is characterised by the absence of any acid or sour eructations, but the patient feels no inclination for food inspite of the normal character of the eructations, if any. The type is further characterised by pain about the region of the heart, and water-brash. The unfavourable symptoms of indigestion are sudden loss of consciousness, delirium, vomiting, water-brash, languor with a gone-feeling in the limbs, and vertigo, etc., which may end in death.

Fasting is beneficial in a case of Ámájirnam indigestion. Ejection of the contents of the stomach gives relief in a case of Vidagdha indigestion. Fomentation will alleviate a case of Vishtavdha indigestion, while in an indigestion of unassimilated chyle, the patient should be confined to bed and fomentations and digestive medicines should be administered as well. In a case of Vidagdha indigestion the patient should be made to

vomit the contents of his stomach with the help of warm water saturated with salt, while in a case of chymous indigestion the patient should forego all food till he is restored to his natural condition. A patient suffering from indigestion whose system has been cleansed and lightened with the abovesaid appliances should go fasting till he is restored to his natural condition as regards the strength and humours of the body.

The eating together of both wholesome and unwholesome articles of food is called promiscuous eating (Samashanam). Over or insufficient eating at intervals and at improper seasons goes by the denomination of irregular eating (Vishamáshanam). Eating before a former meal is thoroughly digested in the stomach is called Adhyashanam. These three kinds of eating are injurious, and speedily give rise to a variety of diseases, or may be ultimately attended with fatal consequences. The drinking of cold water helps the speedy digestion of a partially digested food, which has already been attended with a reactionary acidity, inasmuch as the coldness of the imbibed water tends to subdue the deranged Pittam, and the food thus moistened by the water naturally gravitates into the intestines.

The man, who complains of a burning sensation in the stomach, throat or heart, shall find relief by licking a paste made of honey and powdered Haritaki, or of

pulverised Haritaki and Drákshá. The man, who though strong and effulgent with the glow of health, apprehen- an attack of indigestion in the morning, may partake of a wholesome mid-day meal after taken powdered Abhayá and Shunti. Appeti be experienced even in a state of indigestion, wh chyle or food matter, accumulated in the stoma pressed upon by the deranged humours, is confined corner of the viscus without obstructing the passage o heat of the local fire. This vicarious appetite kills its duped victims with the swiftness of a poison.

Specific properties of matter :—Now we shall deal with the actions of several properties of matter, and from them should be inferred the nature of the properties which are inherent in various kinds of matter.

Coldness—is pleasurable, exercises styptic virtues, alleviates epileptic fits, thirst and a burning sensation of the body, and arrests perspiration. Heat is the reverse in its action to coldness. It greatly helps to set in the process of suppuration in boils and abscesses. Oleaginousness imparts a gloss or oiliness, and acts as an emollient tonic, and cosmetic. Parchedness is the opposite of oleaginousness; it produces stypsis and makes a thing rough to tactual perception. Sliminess is vitalising, tonic, heavy as regards digestion, and tends to produce Kapham, and brings about the adhesion

of fractured bones. The quality of absorption (Vishad) is the opposite of sliminess. It absorbs or soaks up [illegible]ous secretions and helps the process of healing [illegible] or ulcer. Keenness or sharpness begets [illegible]g and suppuration, and arrests secretions. [illegible]ss or softness is the opposite of sharpness. [illegible]ness produces languor, increases excrements, and or tonic, pleasing and flesh-building. Lightness is the opposite of heaviness. It acts as a liquefacient and healing agent. The ten virtues with their actions have now been described.

Now hear me describe the other ten properties of matter with their specific actions. Fluidity is moistening. Compactness is thickening and obstructive. Humidity is like sliminess. Roughness is like absorption. Odoriferousness is pleasurable, subtile, mild and relishing. Fetidness is the opposite of odoriferousness, produces nausea, and brings on a non-relish for food. Laxativeness restores the normal condition of the humours. Narcotism changes the condition of vitality. Expansiveness (like that of wine) is the property in virtue of which a drug or a substance instantaneously permeates the whole organism and is subsequently digested. Evolution or Emanativeness is somewhat identical in its virtue with expansiveness with the exception that it permeates the organism in its undigested state, aud tends to disintegrate the

root principles of the body. Instantaneousness, like the expansion of a drop of oil cast into a bowl of water, helps to permeate the whole organism simultaneously with the use of a drug. Subtility is the quality in virtue of which a thing can penetrate into the smallest capillaries and channels of the body. These twenty qualities or virtues have been described as they are.

Now we shall describe the transformations which the food stuffs undergo in the organism. This animated organism is composed of the five fundamental material principles, and the food of a living organic being necessarily partakes of the character of its corporeal components. The food, which consists of five fundamental material principles (elements), is digested, in its turn, by the five elemental heat or fire, and each of its constituent principles goes to augment its own kindred in the human organism.

The food, which is followed by a sweet, digestive reaction, goes to increase the quantity of Pittam, while the one, which is completely digested, contributes towards the augmentation of the bodily Váyu (nerve force). The stool and the urine are the excreted portion of the well-digested food, the lymph chyle is the substance drawn from the well-matured chyle, (as has been described in the chapter on the description of Blood, Chap. XIV. of the present work). The

lymph chyle carried away by the vital Váyu known as Vyána tends to strengthen all the fundamental principles of the body.

Kapham is the excreted portion of the lymph chyle, the Pittam is that of the blood, the waxy impurities found in the tympanum, etc., are the excreted portions of flesh. Perspiration is the excreted matter of fat. Nails and hair are the excreted portions of the bones. The waxy deposits found in the corners of the eyes, and the oily secretions which sometimes mark the skin are the excreted portions of marrow. With the dawn of day a man wakes from sleep, and his heart unfolds like a lotus flower, and so remains till sleep folds up his eyelids. Hence, the root principles of the body continue non-humid during the state of waking. Accordingly, a man may partake of a meal at night, even if the food eaten in the day continues till then undigested, without the fear of committing the physical sin of Adhyashanam (super-eating). But the reverse is the case in respect of a similar conduct in the night when man has recourse to sleep and his heart remains constricted in a state of unconsciousness, and the root principles of his body become loose and charged with humidity. Hence, it is beneficial to fast on the following day in the event of the food taken overnight being found to be not properly digested.

He, who carefully peruses these rules regarding the regimen of diet as approved of by the holy sage Dhánvantari, the greatest of all the Rájarshis (royal hermits), becomes great in wisdom, and is sure to be glorified with the proud distinction of being the medical adviser of his king or his nobles.

Thus ends the forty-sixth Chapter of the Sutrasthánam in the Sushruta Samhitá which treats of Food and Drink.

Here ends the Sutrasthanam.